ENGINEERING NEWS-RECORD

SEVENTY-NINTH YEAR OF PUBLICATION

A McGRAW-HILL PUBLICATION

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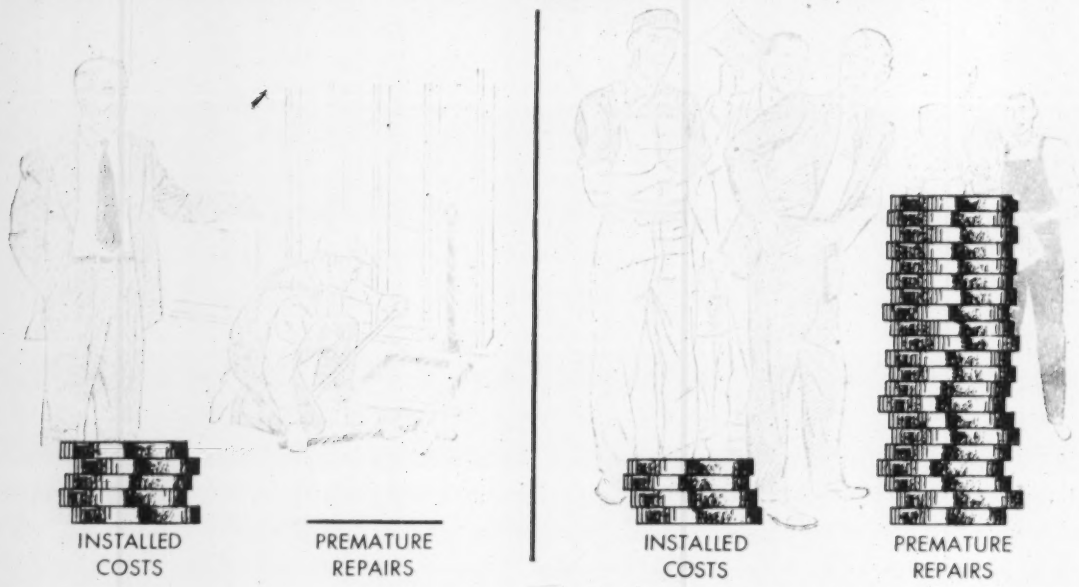
WHICH WILL IT BE...



a little more NOW—or a lot more LATER?

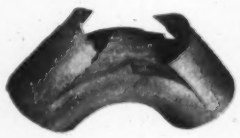
Let's take a close look at this so-called higher cost of wrought iron pipe.

All too often, INITIAL COSTS are used as the only basis of comparison. The fallacy of the initial-cost-yardstick has been proved time and time again in installations where low-first-cost piping has been installed and has failed prematurely. The original installation was quickly made by pipe fitters. But repairs call for hours of work by as many as five craftsmen—pipe fitters, masons, carpenters, plasterers, painters. And labor costs are only part of the picture. The indirect costs of production slowdowns and disrupted routine swell the total of every premature pipe failure. It's easy to see how this first failure can wipe out initial "savings" many times over.

The only *valid comparison* of piping costs is INSTALLED COSTS *plus* REPAIRS. This yardstick places the emphasis where it rightly belongs . . . on SERVICE LIFE. In installation after installation, wrought iron pipe has doubled, tripled and even quadrupled the useful service life previously obtained from low-first-cost piping. All this adds up to one thing . . . the fact that you pay a little more for wrought iron means that you pay a LOT LESS FOR MAINTENANCE. Wrought iron gives you *piping economy,* because it lasts longer, at lower cost per year!

If you are concerned about piping services where corrosion is a threat to durability, you'll find it profitable to investigate the longer life of wrought iron pipe. Our Engineering Service Department will be happy to send you examples of typical wrought iron service records in installations similar to those in which you are interested. Write or call.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Department: New York, N.Y.



Why Genuine Wrought Iron Lasts

This notch-fracture test specimen illustrates the unique fibrous structure of wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glasslike silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

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AND STILL FULL OF DRIVE

HERE's the flat transmission belt that smashes all records for service. Installed in 1917, it faithfully did its daily job of powering a large grain crusher. It was still going strong when the mill was dismantled in 1952. So strong, in fact, that it is still being used to drive an ensilage chopper on a farm — eight hours a day. And it looks like it will go on indefinitely.

Records such as this are not a rare exception, when the G.T.M. — Goodyear Technical Man — is in the picture. His special knowledge of industrial rubber goods — backed by the world's highest standard of quality in materials and workmanship — invariably adds up to longer service at lower ultimate cost.

To get the most out of rubber in every conceivable industrial use, consult your G.T.M. You can contact him through your Goodyear Distributor or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

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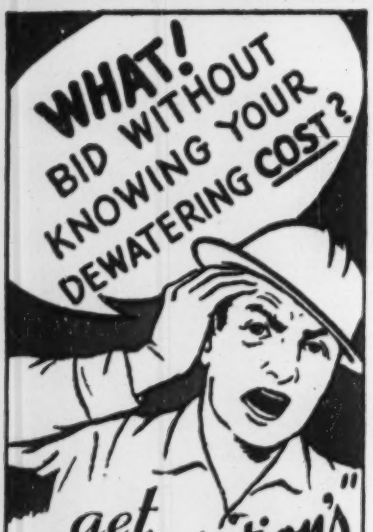

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Contents on page 17

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F. S. Merritt ..... *Architectural, Structural*
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Publisher

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HERE'S A COMBINATION OF ADVANTAGES that puts the Northwest Truck Crane far ahead of the ordinary rig. The High-Speed Power Controlled Boom Hoist, independent of all other operations; Uniform Pressure Swing Clutches that take the jerks and grabs out of swinging; the Northwest "Feather-Touch" Clutch Control that assures ease of operation without complicated mechanism; Cast Steel Machinery Side Frames that maintain delicate shaft alignment and reduce wear and tear; easy upkeep and plenty of power. These, plus the many other Northwest features proved in years of service assure smoother operation and higher output.

The heavy duty carrier supplied with Northwest Truck Cranes is different! Designed by Northwest it brings you a box type frame braced and reinforced the full length as no other Truck Crane Carrier Frame is braced. Improved design has resulted in the better distribution of loads over the frame. Outriggers extend the full width of the Carrier and have considerable more bearing support when extended. Better positioning of outriggers relieves the Carrier of a great amount of stress when crane is operating.

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The Northwest Truck Crane is the greatest advancement in equipment of this kind yet offered the Contractor.

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NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Tamping — Here's a Le Roi-CLEVELAND back-fill tamper air-powered by Tractair, that gives you faster, easier tamping, better compaction, lower costs. This example shows how Tractair teams up with Le Roi-CLEVELAND Air Tools to save time, work, money.

Cutting asphalt pavement — with a Tractair-powered Le Roi-CLEVELAND paving breaker. Note, Tractair in background is equipped with a sweeping attachment. This is just another of many ways that Tractair can save you money.

Drilling trench — Easy holding Le Roi-CLEVELAND sinkers provide the fastest way of drilling rock. The air-power source is a Tractair, equipped with a front-end loader. Tractair is extremely mobile. It has a low center of gravity. It takes money-saving air power anywhere.

LE ROI TRACTAIR

...the 10 in 1 machine that does 10 basic jobs to save you money

It holds down your investment in special equipment

Because Tractair is a combination 35-hp wheel tractor and 105-cfm air compressor, it is extremely versatile.

It lets you take air power wherever you want it — air power for drilling rock, tamping fill, breaking concrete, driving spikes and form pins, or pumping water.

When it is equipped with attachments, you get added usefulness. You can load, back-fill, dig, sweep or hoist.

Although Tractair was pioneered and developed by Le Roi Company to do 10 basic jobs, its money-saving usefulness on costly, nuisance-type work is limited only by the user's imagination.

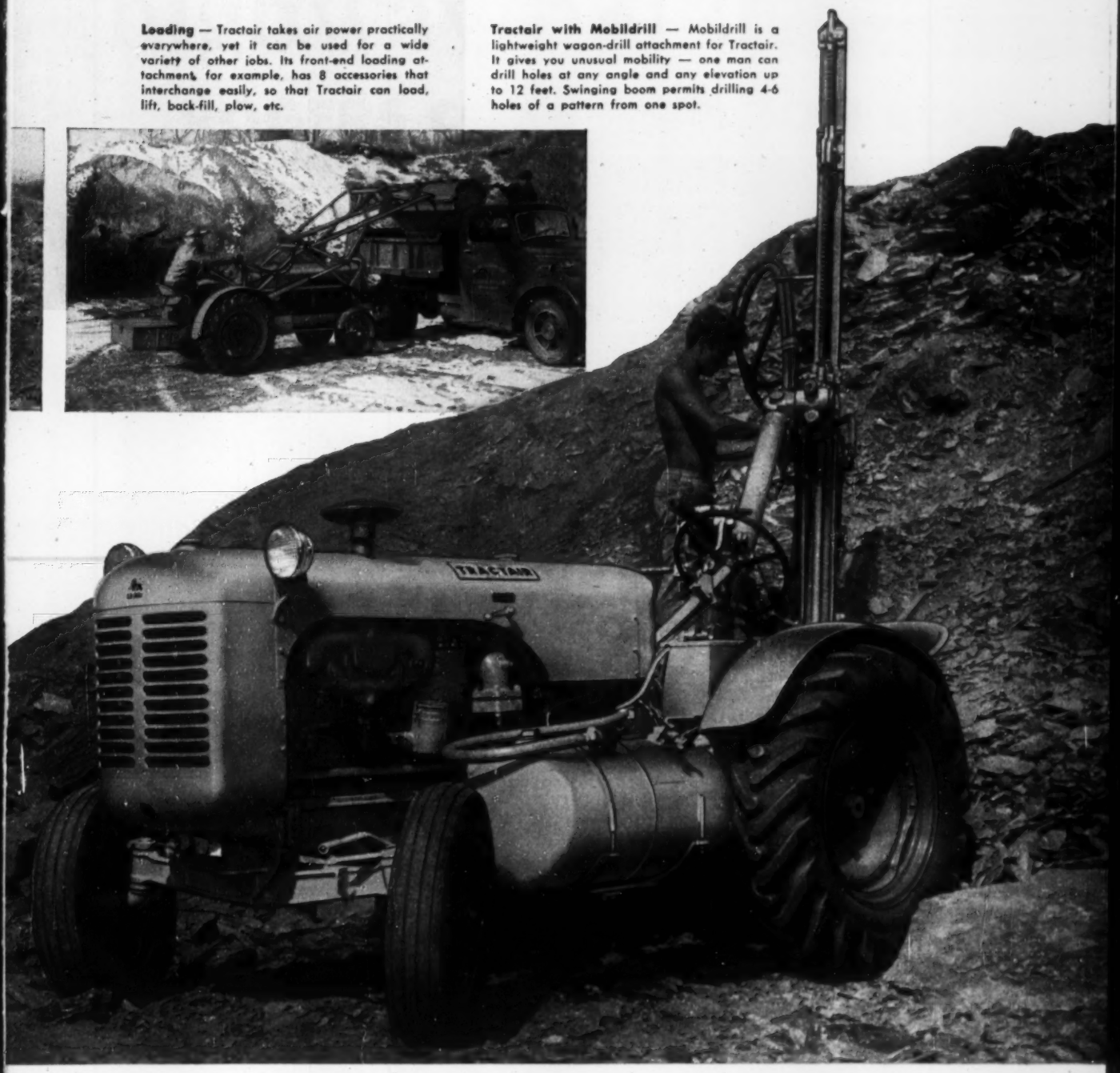
If you want to cut costs, get Tractair. Call your Le Roi dealer for a demonstration, or write us for further information.

LE ROI GIVES YOU MORE FOR YOUR MONEY

More Utility!
More Profits!

Loading — Tractair takes air power practically everywhere, yet it can be used for a wide variety of other jobs. Its front-end loading attachment, for example, has 8 accessories that interchange easily, so that Tractair can load, lift, back-fill, plow, etc.

Tractair with Mobildrill — Mobildrill is a lightweight wagon-drill attachment for Tractair. It gives you unusual mobility — one man can drill holes at any angle and any elevation up to 12 feet. Swinging boom permits drilling 4-6 holes of a pattern from one spot.



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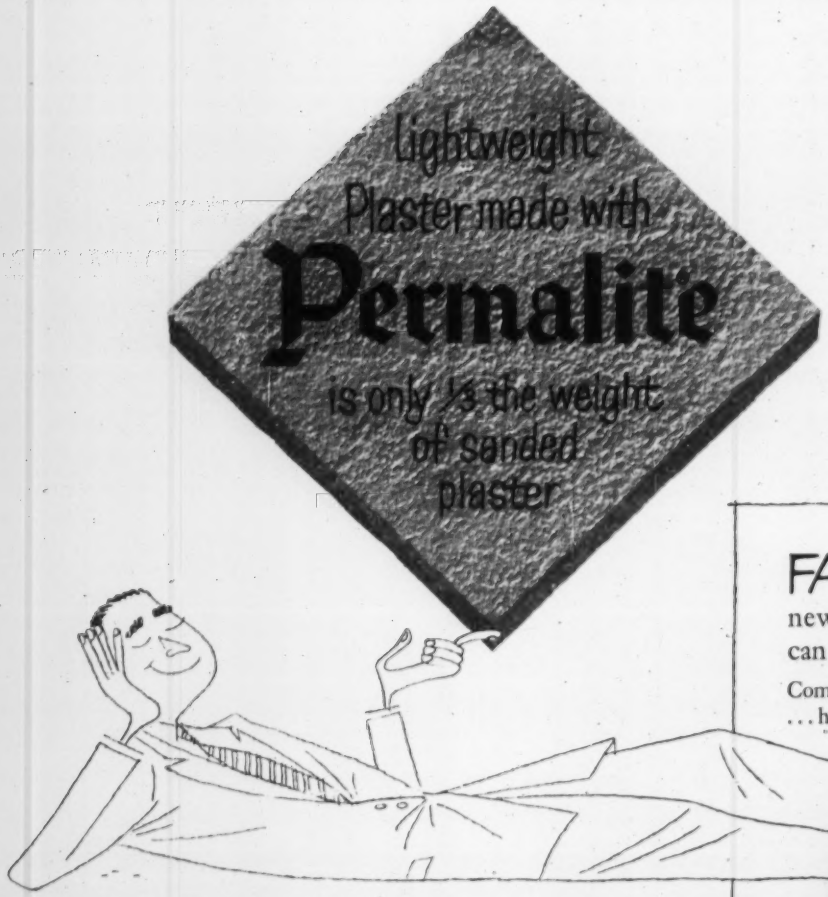

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ARCHITECTS like Permalite plaster aggregate because it aids them in the designing and specifying for modern structures . . . saves up to 1 ton per 100 sq. yds. of wall surface in homes; up to 2 tons per 100 sq. yds. in commercial building!

BUILDERS like Permalite because it gives higher yield than any other lightweight aggregate. There's no waste (Permalite is sold in 4 cu. ft. bags) — easier, more accurate, mixing . . . no storage problem, easier clean-up . . . jobs finish quicker!

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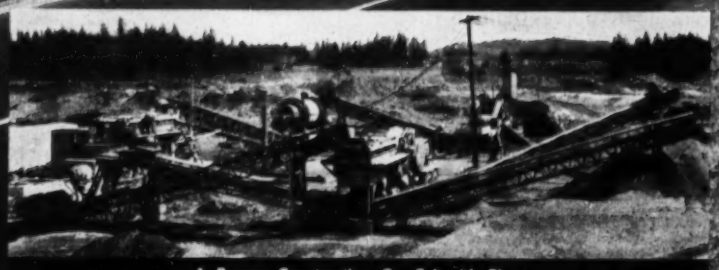
Send for Bulletin 266.

Troutdale-Dodson Section
Columbia River Highway



A Rogers Construction Co. Telsmith Plant

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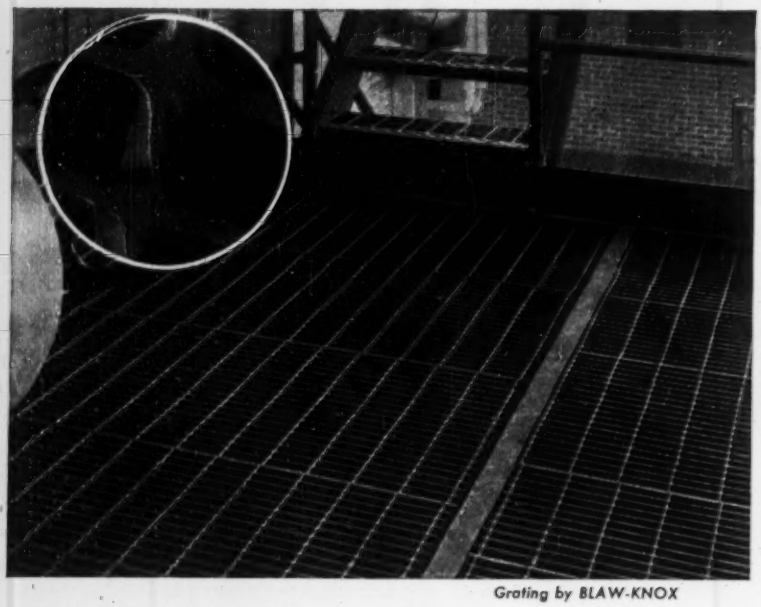

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But how about grating for fan guards and shelving—for covering open pits and light wells? And how about other uses throughout your plant that no one has thought of—as steel grating is adaptable to many uses.

If you have any problem about a common application or an unusual application or a possible application, we'll be glad to hear from you. And to give you a prompt answer.

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A short note will bring you a copy of new Bulletin No. 2365-R —a dimensional sketch will bring you a quotation.

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READER COMMENT

Anti ant hill

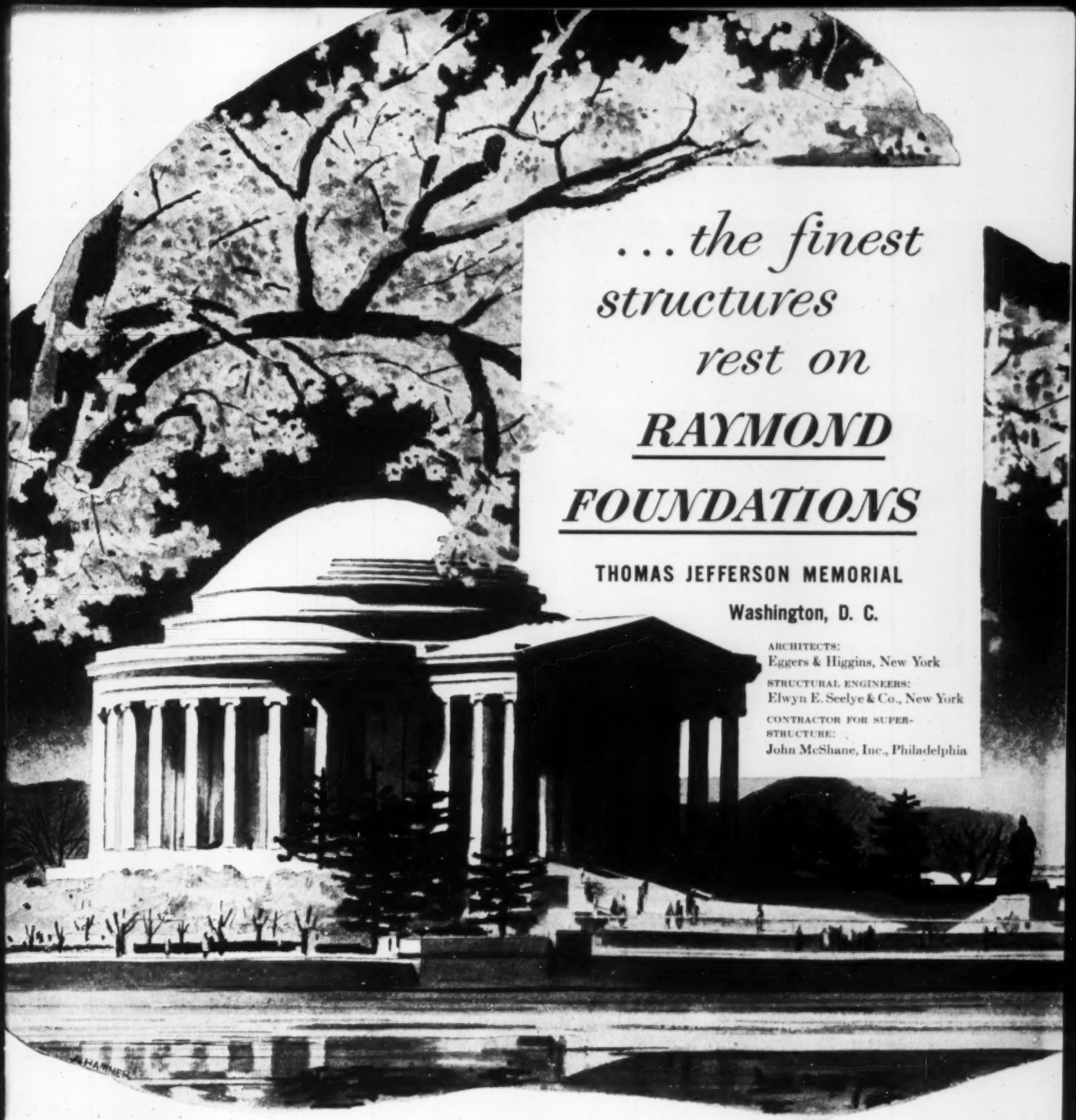
DEAR SIR:—Professor Boyce's report on Java (ENR Dec. 3, p. 54) arrives at some debatable conclusions. The population of Java increased in the last 125 years from 5 to over 50 million, while during the same period the states of Michigan and New York, highly industrialized and of about the same area, reached only 6.5 and 15 million. There can not be much wrong with the native habits of using the streams in view of the above. In fact, the white man could dwell there in health and comfort only after he had adopted some of the native ways, which have survived simply because they proved correct for that country.

The writer lived in Jakarta for 18 years without a day of sickness, when that town had some 300,000 population and no sewage nor water supply except wells and privies. His children, reared in Prof. Boyce's Michigan with all the benefits of sanitation had measles, pox, mumps, jaundice, whooping cough, scarlet fever, etc. The difference is due to outdoor life, greater dispersal of dwellings on large garden plots, salubrious climate, bathing twice daily, healthful food and sunshine.

In the U. S. a town of 300,000 without modern sanitation would be impossible. In a land of far-flung and wide open spaces, still largely empty, Americans have inherited from their European progenitors a curious and passionate "ant-hill complex" originated in the Middle Ages for defense.

Jammed in closely packed urban centers with wide open spaces all around, modern sanitation became an urgent necessity. Water pollution has been taken care of, but air pollution is a tremendous problem left to scavenging by the winds. When these fail we have smog, smaze and the worst putrefied air; we move about in an aerial sewer, while dust from traffic, soot from thousands of incinerators, foul gases from thousands of chimneys and cars, trucks and buses all but choke. There must be a million or so dogs in New York, whose excremental capacity probably equals that of a quarter of a million humans. Nowhere in all Indonesia are found the aerial sewers of New York's jam-packed streets and subways. Jakarta today is not adjusted to two million population, but neither is New York able to cope with its tremendous problems arising from overcrowding.

(Continued on page 12)



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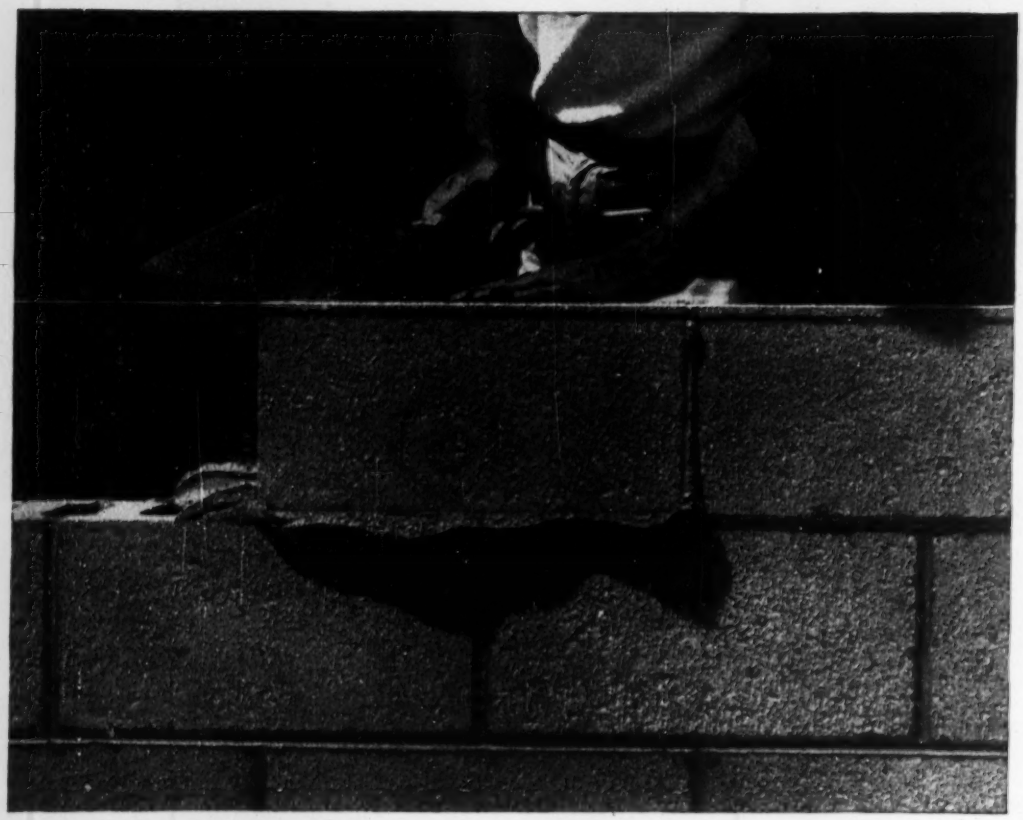
BRIXMENT

Better Mortar for Blocks

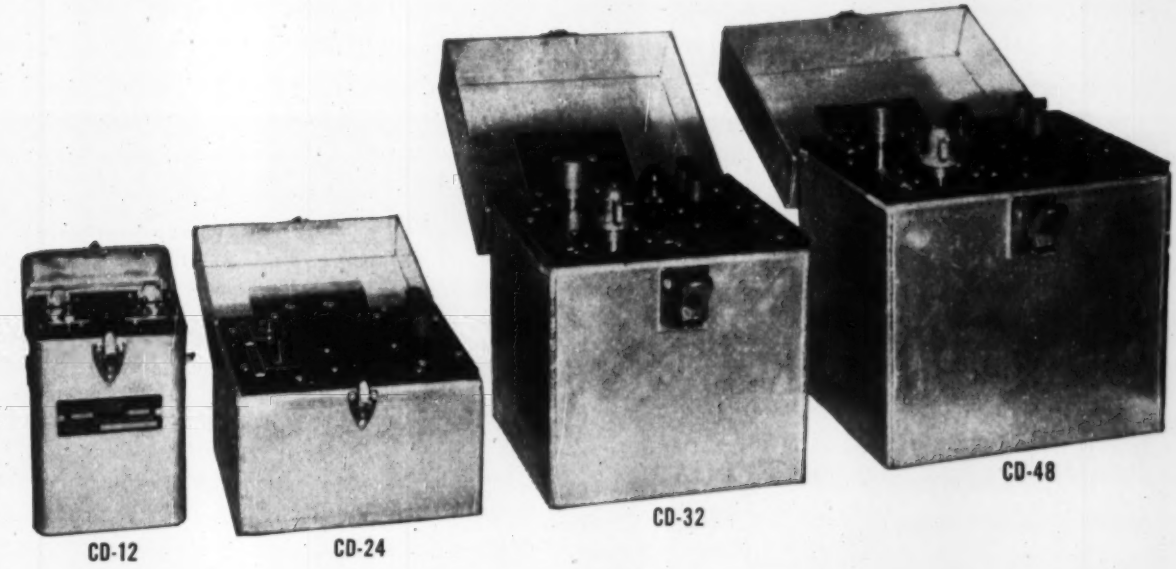


BETTER BODY

When concrete block are laid, the mortar should have "body", to support the weight of the unit, thus holding it up to the line. If the mortar lacks body, the block will settle below the line even if a thick bed of mortar has been spread.

At the same time, plasticity is required. Unless the mortar is plastic, the bricklayer cannot quickly and accurately tap the block down to the line.

Brixment has body and plasticity. It is firm but not stiff — soft but not sloppy. This combination of body and plasticity makes Brixment the best possible mortar to use with concrete blocks.



For more powerful, more dependable, safer electric blasting, use Du Pont CD Blasting Machines

You can fire any conceivable type of blast . . . large or small . . . on the surface or underground . . . with maximum safety, efficiency and economy with Du Pont CD (Condenser Discharge) Blasting Machines—newest development of Du Pont Explosives Research.

Du Pont CD Blasting Machines offer a simple and satisfactory method of firing either primary or secondary blasts. These four lightweight, portable power sources have capacities ranging from 20 holes in straight series to 1200 holes in parallel series. Safety is greatly increased with Condenser Discharge Machines because power *cannot* reach blasting circuits except by the deliberate action of the operator.

These machines eliminate maintenance of permanent firing lines and dependence on motor generators. They have no moving parts, require no physical effort as with mechanical-type machines, and are extremely easy to operate. Long-lasting radio-type B batteries charge the condensers, light up a pilot lamp when they're fully charged. Shots are fired only by turning on a firing switch. Terminals are dead until the instant of firing.

It's easy to fire large or small shots with maximum safety using Du Pont CD Blasting Machines. Ask the Du Pont Explosives representative in your area for complete information about them. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

Characteristics of Condenser Discharge Blasting Machines

Model	Rated Voltage	Capacity with Leading Lines Not Exceeding 3.0 Ohms Resistance			
		Straight Series		Straight Parallel	Parallel Series
		Primary	Secondary		
CD-12 Weight 4 lb Width 4 in Length 5¼ in Height 7 in	120	20	30	NR*	NR*
CD-24 Weight 12 lb Width 7⅛ in Length 8¼ in Height 6½ in	240	50	75	NR*	240 (6 series of 40 each) (8 series of 30 each)
CD-32 Weight 22 lb Width 9½ in Length 9½ in Height 10½ in	320	50	125	30	480 (10 series of 48 each) (12 series of 40 each)
CD-48 Weight 27 lb Width 9½ in Length 11 in Height 12¼ in	480	50	200	60	1,200 (24 series of 50 each) (30 series of 40 each)

*NR means not recommended for the purpose.

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

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K. E. McCONNAUGHAY

LAFAYETTE 5, INDIANA

READER COMMENT

What the 50 million Javanese need is not more literacy but more rice. What they do not need is the copying of Western overcrowding in jam-packed cities, which then make sewerage indispensable. They need adherence to their former habits of living in widely dispersed garden cities; the native villages are not a problem. The yield of rice per acre in Texas is twice that of Java; they do not need engineers as urgently as they do better agriculture.

A. STREIFF
Civil Engineer
New York, N. Y.

Albeni Falls under way

SIR: The map with the otherwise fine article on Pacific Northwest power (ENR Nov. 19, p. 33) shows Albeni Falls Dam as a proposed project. In direct contrast is the front cover photo that shows this project nearly completed.

Reason this could hardly escape my attention is that our firm assisted Fred W. Crocker in consulting for the contractor, Albeni Constructors, on design of the cableway towers and trestle for the construction work.

JACK Y. LONG
J. Y. Long Co., Engineers
Oakland, Calif.

[EDITOR'S NOTE: Cabinet Gorge Dam also shown as proposed is in fact long since completed and generating power.]

Two ways to stop collapses

SIR: Your editorial, "Form shores in the spotlight" (ENR Oct. 22, 1953, p. 76), is very much to the point, and so right. But I cannot go along with G. L. Blanchard's view in his letter in ENR Dec. 17, 1953, p. 11. This, in a way, would tie the hands of architects and engineers to the will of the executives of insurance firms who may not have architectural or engineering training.

There are two things that I think would all but eliminate such accidents:

1. Architects and engineers should stop experimenting with field work. Leave it to those who are big enough to make test models to try out the new ideas and innovations. Do not turn them out to the public until they are proved by model test.

2. Architects and engineers should stay with their code of ethics and state laws. Do not take a design job without also furnishing the super-

(*Continued on page 14*)

How to operate BIG with little effort!

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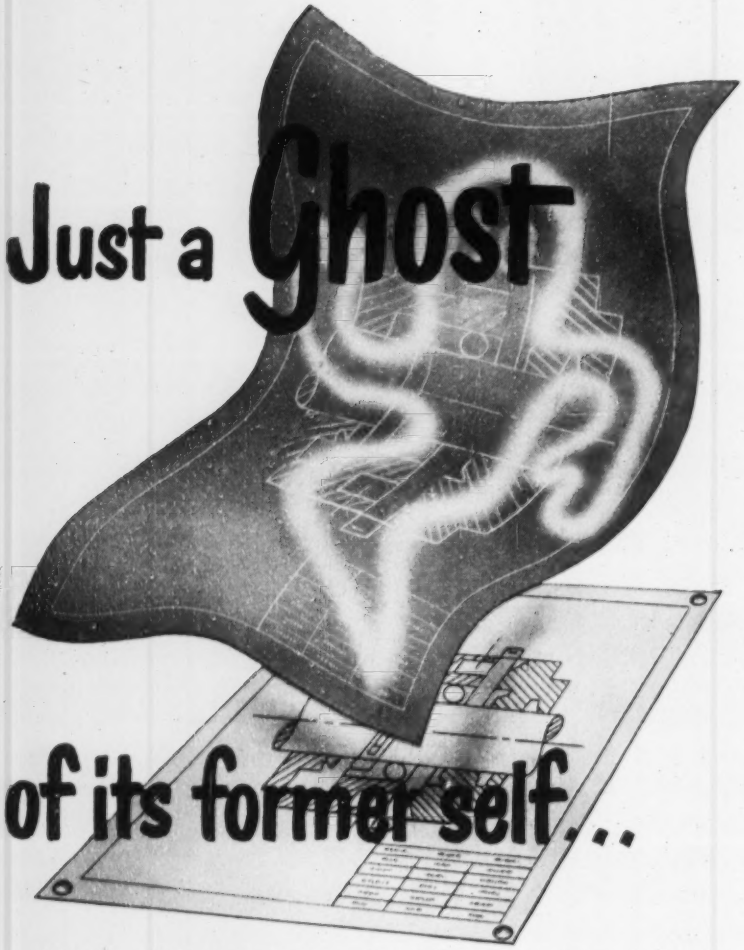

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READER COMMENT

vision. I know that some may fear loss of business if they adhered to this strictly—and they are right. I have lost several jobs on account of it.

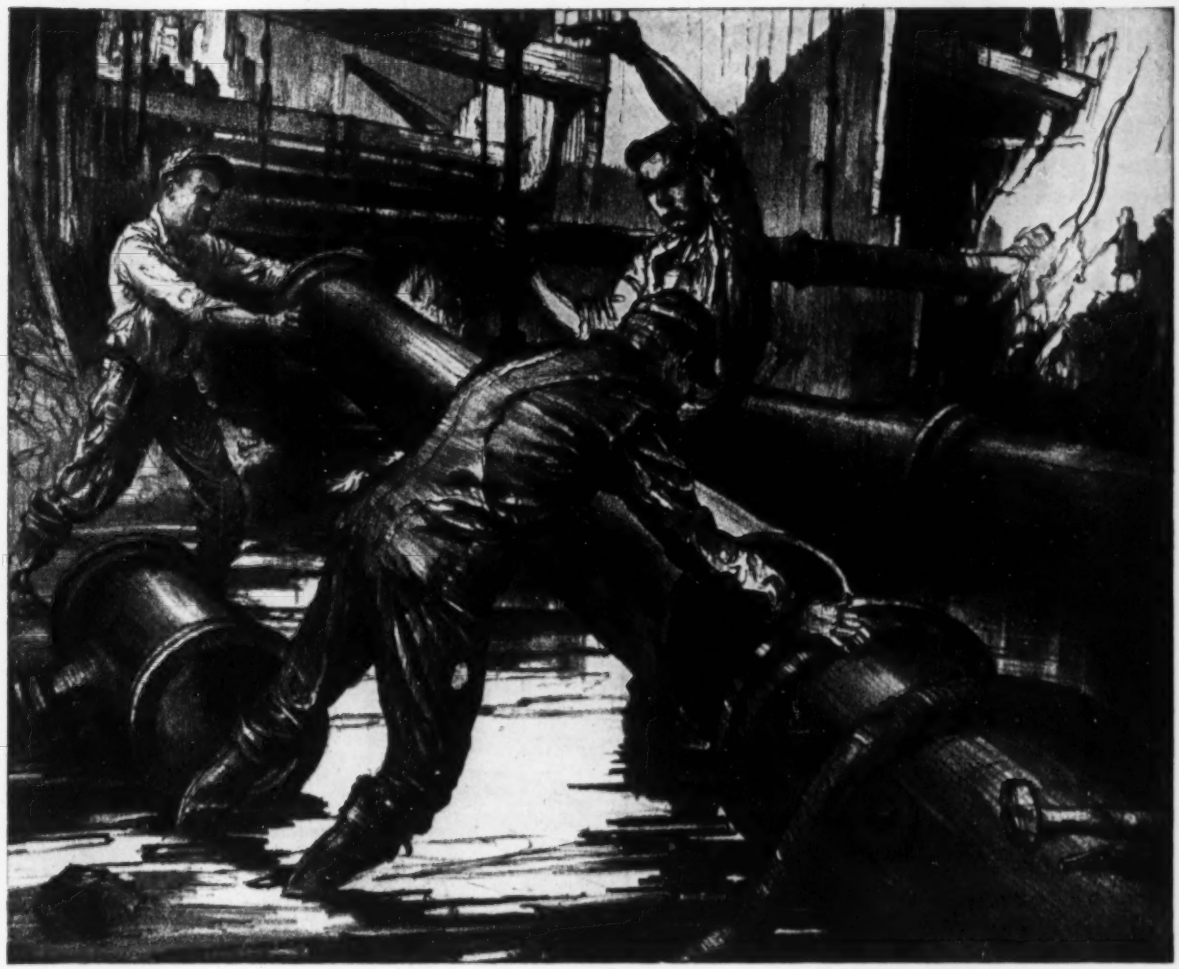
I do not know how all other state engineering registration laws read, but most of them are substantially the same. The Texas law calls "responsible supervision of construction . . . wherein public welfare or the safeguarding of life, health or property is concerned . . . engineering," and states such work must be done by a registered engineer. For public works, plans, specifications and estimates must be prepared by, and the engineering construction executed under, the direct supervision of a registered professional engineer.

The way I see the matter, it is not only a violation of ethics to design a project and not have charge of the inspection—or at least be sure that the job will have proper engineering inspection—it is also a violation of state law at least here in Texas. I am fairly sure that the same applies in the other states.

W. C. WHALEY
Consulting Engineer
Eastland, Tex.

CALENDAR

N. Y. Section AWWA, winter luncheon meeting, Commodore Hotel, N. Y. City, Jan. 19.
Conference on Prestressed Concrete, University of Toronto, Toronto, Ont., Jan. 28-29.
Associated Equipment Distributors, Waldorf Astoria Hotel, N. Y. City, Jan. 31-Feb. 4.
Association of Asphalt Paving Technologists, Kentucky Hotel, Louisville, Ky., Feb. 1-3.
Ohio Water Clinic Conference, Ohio State University, Columbus, Feb. 11-12.
N. J. section American Water Works Association, winter meeting, Essex House, Newark, N. J., Feb. 16.
Northwest conference on road building, University of Washington, Seattle, Feb. 17-19.
American Concrete Agricultural Pipe Association, Fairmont Hotel, San Francisco, Calif., Feb. 24.
National Society of Professional Engineers, Hilton Hotel, Albuquerque, N. M.
Highway Engineering Conference, University of Colorado, Boulder, Feb. 25-26.
American Concrete Institute, Golden Anniversary Convention, Shirley-Savoy Hotel, Denver, Colo. Feb. 22-25.
American Concrete Pipe Association, annual convention, Fairmont Hotel, San Francisco, Calif., Feb. 25-27.
Associated General Contractors of America, Hotel Statler, Los Angeles, Calif., March 1-4.
Illinois Highway Engineering Conference, University of Illinois, Urbana, March 2-4.
N. Y. State Association of Highway Engineers, Arlington Hotel, Binghamton, N. Y., March 3-5.
Association of Highway Officials of the North Atlantic States, Hotel Shoreham, Washington, D. C., March 10-12.
Southern Municipal and Industrial Wastes Conference, N. C., State College, Raleigh, N. C., March 18-19.
Southeastern section AWWA, Poinsett Hotel, Greenville, S. C., March 29-31.



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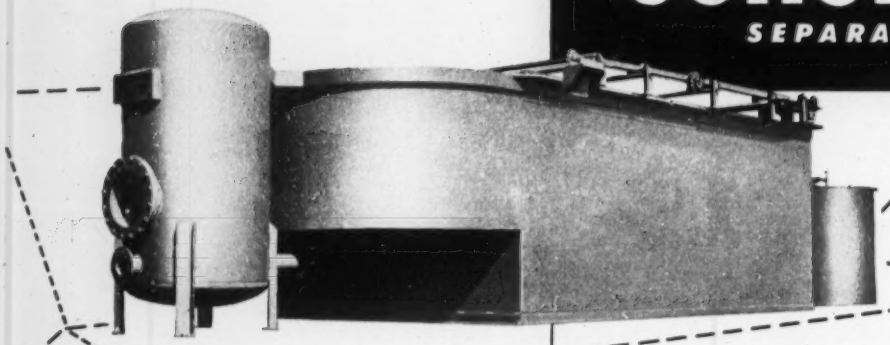

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Vol. 152, No. 2

NATIONAL AFFAIRS

Eisenhower would strengthen federal aids to construction 21
General contractor named for Spanish bases 23
Glass walls will show off New York bank's interior 24
Federal backing for toll highways urged at road builders' meeting 25
Maryland sets up first year schedule of projects costing $78-million 26

LABOR

Building trades biggest gainers if TH changes get through Congress 27

FEATURES

Kitimat, B. C., wharf built in dry, floated to place 29
Industrial wastes inventory shows facts lacking 34
Soil-cement base solves Wisconsin road problem in rebuilding State Highway 54 38

MUNICIPAL

Seven insurance firms build in Jacksonville—resulting tie-up breeds concern 43
"Built in" curbs speed paving job at Lincoln Village, Ohio 44

INTERNATIONAL

Prestressed I-beams support roof of reinforced concrete building in London 49

FIELD AND OFFICE

Moment of inertia computations simplified for irregular sections 54
Machines greatly reduce costs of cutting column footings 55

BUSINESS AND FINANCE

State governments spill over—need for office space increases 69
Survey shows stable demand for commercial buildings 69
Plenty of municipal projects planned for coming months 69
Activity this week 70
The longer look: Although business will slow down a little in 1954, spending plans are high 72
Depreciation speedup: How much do we need? 72

NEW PRODUCTS

Rubber traction for faster action 84
New cap flashing quickly installed 87
"Screed package" offered for greater versatility 91
Publications 94

Reader Comment 8
Calendar 14
Washington Observer 19
Obituaries 52
Books 56
Construction Reports 59
Unit Prices 66
Editorials 96

THE CONSTRUCTION WEEK

VERY GOOD, THANKS—While the U. S. construction industry was booming along to a near-record year in 1953, Canada was having its own building boom, reported the Canadian Construction Assn.

Said CCA: An all-time record of some $4.5 billion of construction was put in place in '53, including a record volume (105,000) of new housing units started.

Added CCA president John N. Flood: 1954 will be at least as good; labor and other costs will hold fairly stable; supplies are in much better balance.

LIMIT ON NAILS—In spite of full-scale tests recently carried out on long-span (60-ft), shallow (4½-ft) nailed trusses (ENR Dec. 17, 1953, p. 35), Los Angeles building officials are now limiting use of such trusses to a 30-ft span.

Indirectly responsible for the limitation is the particular design tested—even though it has proved to be sound.

Reason: During construction of the building in Van Nuys for which the trusses were designed, the members were left unbraced. They were blown over in a windstorm although later they were used successfully.

Officials decided to impose the 30-ft limit because of unpredictable secondary stresses.

LEGAL TOLL BRIDGES?—Montana's efforts to put itself into the toll-bridge business are at stake in that district court action filed at Helena by a mining concern (Monarch Mining Co.) and a private citizen.

Acting under a 1953 law, the state highway commission planned a structure over the Missouri River in the northern part of the state, to be financed by bond issues.

The court action contends the law is unconstitutional in that it permits creation of a state debt of more than $100,000 without a taxpayer vote.

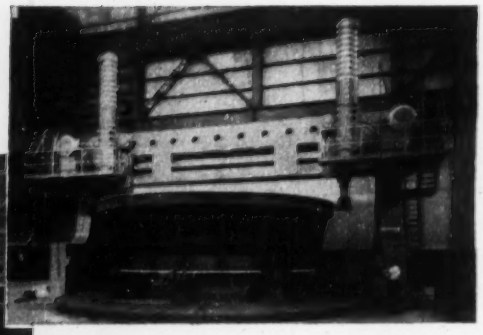
ORE RAILROAD EXTENSION OUT?—You can discount those rumors of a Labrador railroad extension northward across the peninsula to reach new iron ore deposits on Ungava Bay.

There's plenty of ore at Ungava on Hudson Straits—but the best deposits found yet are on the bay's shore. And on that shore a harbor wouldn't be blocked by wind-driven ice, could operate five months a year or longer.

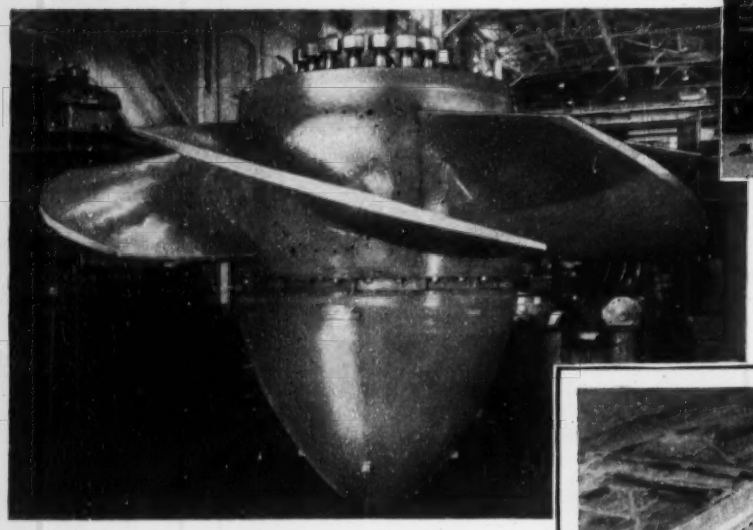
Cyrus Eaton, Cleveland financier who led development of Steep Rock in Western Ontario, sees water transport (probably to Europe) as an economic means of handling Ungava Bay ore. The Knob Lake-Seven Islands ore railroad, by the way (360 mi south of Ungava), is being completed now and will be carrying ore next year (ENR Sept. 18, 1953, p. 39).

POWER by SMITH

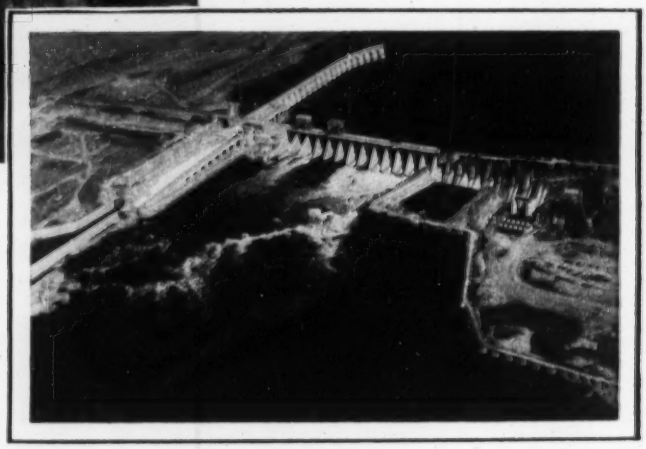
16,000,000 HORSEPOWER



Discharge ring for one of the McNary units on a 40 ft. vertical boring mill in the Smith Shops.



SMITH-KAPLAN 280 in. diameter runner assembly weighing 147 tons.



Aerial view showing construction of McNary Dam, a U. S. Engineers Project, on the Columbia River. Navigation locks are at left and the powerhouse site is at the right.

HIGHEST POWER KAPLAN TURBINE *NOW IN OPERATION!*

A NEW RECORD was established when the first of 14 SMITH-KAPLAN turbines went into operation November 5, 1953 at McNary Dam. *Each* of these turbines is rated at 111,300 H.P. at 85.7 R.P.M. under 80 ft. net head. The previous record for this type turbine was the 10 SMITH-KAPLAN turbines installed at Bonneville, another U. S. Engineers Project.

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WASHINGTON OBSERVER

Only part of Eisenhower's many construction proposals will become law. Taking his State of the Union message (page 21) and his Taft-Hartley message (page 27) as a whole, it's easy to see that many of his specific measures were presented in the certain knowledge that they could not be passed. For one thing, there are just too many for Congress to act on in the next six months; and a good many are suggestions that Congress won't go along with.

Best prospects are for rivers and harbors and flood control plans. They call for more new starts, and in an election year this is the kind of legislation that the congressmen like to vote for.

The package of ideas to bolster home building also looks good. There's a growing wave of recession talk, and Congress is particularly sensitive to the need for legislation that will help keep housing starts at the million-a-year mark.

But authorization of 35,000 public housing starts isn't likely. That many units is being proposed by Public Housing Chief Slusser, and this is almost certain to be the Administration's official recommendation. Congress, however, seems more likely to vote no more than the 20,000 units they voted for this year.

Eisenhower's cuts on military spending will get a green light from Congress. There will be sharpshooting from the Democrats, but by continuing to spend for the build-up of the Air Force while reducing total spending, he's come up with a political package that is pretty hard to vote against. The opposition will say he's cutting back too far too fast, but as things stand now Eisenhower should be able to get most of what he asks for.

•

On Taft-Hartley changes, Eisenhower is clearly out of line with Congress. The proposals for changes in the building trades might be approved by Congress, but by being wrapped up with other union-rousing ideas, the Administration's stand will be attacked by labor as anti-union and pro-management. Outlook is still for little or no Taft-Hartley changes.

•

Retention of the post-Korean ½-cent excise tax on gasoline is expected to be approved by Congress. It's scheduled to expire on April 1 along with other excises amounting to about $800 million a year in taxes. Eisenhower wants all of the $800 million retained for two reasons: (1) to maintain revenues, and (2) to prevent opening a Pandora's box of repeals and revisions that might get out of hand in Congress.

Efforts to shift excise burdens—including giving ½-cent relief to gasoline—will be strong in the House. But Senate leaders, including tax committee Chairman Millikin, and the Democrats are inclined to support Eisenhower's appeal for limiting tax relief only to revision of regulations on depreciation, research, etc. Unless business turns down drastically, the gasoline and other excises will stay in the law.

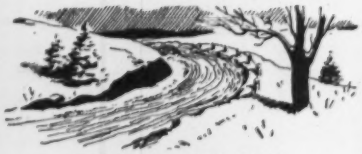
•

A $43-million expansion of the Cuban Nicaro nickel plant has been ordered by the General Services Administration. The new construction will increase Nicaro's 28-million-lb capacity by 75%. The decision to expand the government-owned Nicaro plant pretty much kills the request of Freeport Sulphur for an $80-million government advance to develop its sulfuric acid leaching process to replace Nicaro's ammonia leaching process in refining nickel ore.

•

Here's the way Interior Secretary McKay has reorganized the Reclamation Bureau's Washington office: The assistant commissioner for irrigation and power (Harvey F. McPhail) will supervise project development, irrigation, power and engineering. The assistant commissioner for administration (S. W. Crosthwait) will handle finance, program coordination, personnel, procurement and property management, organization and methods, and foreign activities.

STERLING ROCK SALT SOLVES WINTER'S TWO TOUGHEST TRAFFIC PROBLEMS



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President sets these construction policies:

- **Housing**
  - Liberalize and simplify home mortgage insurance.
  - Continue public housing until a better program turns up.
  - Direct slum clearance aids for fighting city decay.
  - Insure loans on easy terms for low-income families.
  - Use mortgage insurance to help private rebuilding of run-down neighborhoods.
- **Highways**
  - Continue government's central role in federal-aid highway program.
  - Turn highway finance study over to Congress and the states as soon as it is ready.
- **Hospital aid**
  - Broaden hospital aid law to encourage building of additional health facilities, including nursing homes.
- **St. Lawrence Seaway**
  - Approve U. S. participation with Canada.
- **Flood control**
  - Start 23 new projects in fiscal 1955.
  - Strengthen upstream flood prevention work.
  - Develop uniform water resources policy.
- **Plant expansion**
  - Give fast amortization to companies that want to expand their plants.
- **Military housing**
  - Supply better quarters and family housing for military personnel.
- **Anti-recession**
  - Draft public works plans well in advance of any emergency.
- **Renegotiation**
  - Extend contract renegotiation law applicable to defense jobs.

Eisenhower would strengthen federal aids to construction

President Eisenhower has loosened the check-rein on government construction programs. In his State of the Union message last week, he gave Administration blessing to broadened federal supports for housing, highways, flood control, rivers and harbors, reclamation and health facilities.

On water development, Eisenhower said that the Administration would start 23 projects in fiscal 1955. For federal-aid highways, he declared that the federal government will continue its traditional role, a bigger program. And for housing, he unveiled proposals that will support construction of one million new homes a year—plus greater activity in rehabilitation—with no cut-off of the present public housing program. The program is 20,000 units for fiscal 1954, but Public Housing Chief Slusser is pressing for 35,000 units for fiscal 1955.

• **Congress may add projects**—In an election year, Congress is expected to outdo the Administration in enlarging the scope of federal construction activity for fiscal 1955. Congressmen are likely to approve more new projects, for example, than the President will ask for in his budget, and they may expand other programs to win the favor of the voters back home.

Only the budget drafters knew last week where the 23 water projects would be started. Informed observers assumed that the President was talking specifically of projects that could be called new starts.

Signs pointed to the probability that most of the projects had been selected from the rivers and harbors and flood control programs of the Army Engineers. Relatively few new reclamation projects were considered likely to win Administration favor. And the uncertain status of the Agricultural Department's upstream flood prevention programs (ENR Oct. 8, p. 71) make it improbable that any work on them could be scheduled now for starting in fiscal '55.

• **Small jobs in view**—Included in the 23 projects are likely to be a number of small jobs that can be completed in about one year, without the necessity of coming back for a second appropriation. The Administration has been aiming to broaden the base of the Army civil functions program. That means getting back to smaller projects—not putting such a heavy proportion of the annual appropriation into continuing work on big multi-purpose jobs. Rather, as the Administration sees it, the budget should include some small one-year projects and a few medium-size jobs taking two to three years to complete.

Wide World Photo

Most of the Truman-approved projects lopped off in last year's budget review were up for consideration again this year, with some chance for approval. Among them were five flood-control possibilities ranging from a $500,000 project on the Little Missouri River in Arkansas to the $20-million protective works on the Ohio River in the Wheeling-Benwood area.

. . . Stronger federal construction aid

Navigation projects rejected last year —five in number—ranged from a $600,000 job for Duluth-Superior Harbor to the $19-million Warrior Lock and Dam in Alabama.

Also Eisenhower called upon Congress to approve U. S. participation in the St. Lawrence Seaway. That proposal stands a better chance in the Senate this time, but the House still looks extremely doubtful.

• **Wants gas tax continued**—On federal-aid highways, Eisenhower made as definite a declaration as could be expected in a broad message. These are his words:

"To protect the vital interest of every citizen in a safe and adequate highway system, the federal government is continuing its central role in the federal-aid highway program."

Then he added a special plea for continued federal revenues to permit increased aid, especially to the nation's 40,000-mi backbone network: "So that maximum progress can be made to overcome present inadequacies in the interstate highway system, we must continue the federal gasoline tax at two cents per gallon. This will require cancelation of the ½-cent decrease, which otherwise will become effective April 1st, and will maintain revenues so that an expanded highway program can be undertaken." (See page 25 for ARBA position on this issue.)

As for proposed federal withdrawal from gasoline taxation, he had only this to say: "When the Commission on Intergovernmental Relations completes its study of the present system of financing highway construction, I shall promptly submit it for consideration by the Congress and the governors of the states." The commission is to report by March 1.

• **A push for housing**—For housing, Eisenhower laid out a five-point program that would buttress present federal support of home building. He promised a message on new housing legislation Jan. 25. His outline last week included nothing that would cause a bitter fight in Congress.

Eisenhower proposed federal insurance of long-term, small-down-payment loans for low-income families. But he called for continuation of the present public housing program until some other means of supplying the need proves more effective.

Also, he proposed that federal grants and loans to cities for slum clearance and redevelopment be directed toward stimulating cities to attack decay on a wide front. For a related purpose, the President asks that loan insurance be expanded to encourage private rebuilding and renovating of dwellings in neighborhoods that are going downhill.

And, as a basic proposal, Eisenhower called for modernizing of the whole mortgage insurance system. That will mean a simplifying and equalizing of insurance terms for all classes of residential properties, including old and new houses. It could also mean increasing loan ceilings and loan-to-value ratios to allow for higher costs, thus easing down-payment percentages to former levels that prevailed in a lower-priced market.

Over all, the President's housing recommendations would stimulate the construction, improvement and sale of private homes. And they indicate no reduction in the present rate of public housing, limited by Congress to 20,000 new units this year. The Administration program offers ample federal support for the building of one million new homes a year. Congressional action is more likely to expand than contract the program for private housing, but a battle will develop over the Administration's proposal to continue public housing.

• **Larger medical program**—On the federally aided hospital program, Eisenhower called for a broadening of the Hill-Burton Act of 1946 to encourage the building of diagnostic centers, facilities to restore the physically handicapped, and nursing homes. He also advocated assistance in developing adequate facilities for the chronically ill. If Congress goes along with the proposals, the Hill-Burton program may enter upon a larger construction phase approaching the activity of earlier years.

Industrial and commercial construction got a boost from the President in his section on tax revision. For the business firm that wants to expand or modernize its plant, he advocated faster write-off of the cost of the new construction. He also proposed more liberal tax treatment of retained earnings and of research and development expenses. All of these changes, if adopted, would produce effects encouraging to new construction by business and industry. The President indicated that the House Ways and Means Committee will include the proposals in the bill it submits to Congress.

Nuclear weapons and air power were cited as the top two considerations in Eisenhower's review of defense planning. Together, he indicated, they make possible the cut recently decided upon in military personnel. That reduction necessarily implies some reappraisal of construction programs.

• **Cites defense construction goals**—Increased reliance on air power—both Navy and Air Force—will show up in his budget message Jan. 21, Eisenhower said. His words reinforce the prediction that the revised defense program calls for additional airbase construction, both at home and overseas.

Good pay alone is not enough to hold trained military personnel in the armed forces, the President pointed out. He urged Congress and the Defense Department to give greater attention to other morale factors, such as living quarters and family housing units.

Coming soon, Eisenhower indicated, will be the new plant-expansion goals to put the nation in readiness for full mobilization. When the gaps in the mobilization base are determined, the government will move swiftly to fill them, he said.

Continental defense—both military and non-military—is being strengthened at increasing speed, the President declared. Spending this year is greater than last, he said, and in fiscal 1955 it will be nearly a billion dollars higher than in 1953. A good share of the expenditure undoubtedly goes for defenses such as radar and guided missile units. On civil defense specifically, Eisenhower said nothing about federal activity but put heavy emphasis on the importance of cooperation by state and local governments and volunteer citizen groups.

Looking at some of the problems of the federal government's own city—Washington, D. C.—Eisenhower offered strong encouragement to local officials and citizens who are seeking congressional approval of a ten-year $306-million public works program.

In the field of foreign operations, Eisenhower declared that "technical assistance must be maintained." Behind that statement lie Administration plans to send increasing numbers of engineers and technicians overseas to help underdeveloped countries.

Foreign economic aid, on the other hand, can be reduced, Eisenhower was happy to report.

Plans of the Administration to counteract a business downturn will show up in the economic report that Eisenhower will send to Congress Jan. 28. Last week he said that the report plus special messages to Congress will recommend: advance plans for public works; flexible credit and debt management policies; improved lending, guaranteeing, insuring and grant-in-aid activities; tax changes to stimulate business spending, and bigger opportunities for foreign investment.

FIRST PHASE of Spanish base program calls for four air and one naval installation.

Contractors named for Spanish bases

Rear Admiral John R. Perry, Chief of the Navy's Bureau of Yards and Docks, has named Raymond Concrete Pile Co., New York, Walsh Construction Co., Davenport, Ia., and Brown & Root, Houston, Texas, as joint contractors for the air and naval bases in Spain.

These same three contractors only recently have wound up a similar assignment on our airbases in France where their joint venture went under the name of Construction Management & Engineering Associates. CMEA was originally appointed by the Air Force's Directorate of Construction, and was later absorbed by the Joint Construction Agency when that body was created to integrate and supervise all U. S. Defense Department construction in France (ENR June 11, 1953, p. 34).

CMEA operated in a supervisory capacity in France, and this same set-up, with some variations, will be continued in Spain. Just as French contractors held the actual construction contracts in France, Spanish contractors will be used in Spain. It is thought likely, however, that the U. S. management contractors will employ some of their own or government surplus construction equipment and plant in Spain, which was not the case in France. It is also possible that other U. S. contractors may form joint ventures with Spanish firms.

The probable location of the first airbases to be built in Spain will be at Zaragoza, Torrejon (northeast of Madrid), Moron (southeast of Seville), and El Copero (just beyond the southern outskirts of Seville). These four airbases will be supplemented by port and naval facilities at Cadiz (see map).

Architect-engineers for the project (whose initial stage has been tagged with a cost of $150 million) were appointed two months ago. The group is composed of Shaw, Metz & Dolio, Chicago, Pereira & Luckman, Los Angeles, Frederic R. Harris, Inc., New York and Metcalf & Eddy, Boston. They have already opened an office in Madrid.

The Spanish bases work is the first major project to be handled for the Air Force by the Bureau of Yards and Docks.

Senator Francis Case of the Senate Military Construction Subcommittee said this week that the first $50 million is now available for immediate start of construction in Spain. It has been generally understood, however, that actual construction work in the field will probably not begin before May.

Powerhouse contract awarded at The Dalles

Award of an $18.9-million contract for the third phase of the powerhouse work at The Dalles Dam on the Columbia River marks the third in a recent series of milestones in the life of this $350-million Army Engineer project.

A double ceremony in mid-December marked the pouring of the first concrete after two years of excavation work under three major contracts and the opening of the Wasco County (Ore.) $4-million toll bridge.

The third phase contract went to the joint venture of Guy F. Atkinson Co. and Ostrander Construction Co., which also held a $14.4-million contract for spillway excavation (ENR May 28, 1953, p. 27). The new contract covers powerhouse substructure for Units 15 through 22, east fish ladders and east non-overflow dam, and for furnishing and installing weirs and gates for the fish collection system.

Further construction bid openings are scheduled for June.

Appropriations Committee may employ consultants

The Senate Appropriations Committee may employ consulting engineers to assist it in evaluating federal construction projects.

A report recommending this practice is due to be submitted to the committee soon by George Leary, chairman of the board of Morris & Cummings Dredging Co. of New York.

Sen. Styles Bridges, committee chairman, points out that his committee frequently is confronted with large requests for construction funds, with little or no engineering data for guidance other than that supplied by the requesting agency.

Federal-aid road needs placed at $35 billion

The American Association of State Highway Officials estimates improvement on all federal-aid highway systems at $34,951,312,000. This is an updating of the figures compiled in 1951 and represents an increase of $3 billion over the 1951 figure, in spite of the more than $3 billion spent by the states and the federal government on the systems since then.

Most states show an increase in need for improvements. New Jersey leads the parade with a jump of $650 million, even though the new turnpike has been finished since the last study. Florida showed the greatest proportionate increase, zooming from $230 million to over $830 million. Ohio's needs rose $400 million over the 1951 figure of $1.3 billion, and Kentucky went from $556 million to $839 million. Other increases were considerably smaller.

In the other direction, 17 states registered a decrease in improvement needs. California showed the steepest decline, dropping from $3.1 billion to $2.7 billion. Pennsylvania and Oregon dropped about $100 million each.

Only four states, Minnesota, North Dakota, Tennessee and West Virginia, showed no change.

This increase in need contributed to the decision of AASHO to recommend that Congress increase the annual appropriation for the federal-aid highway program to $900 million.

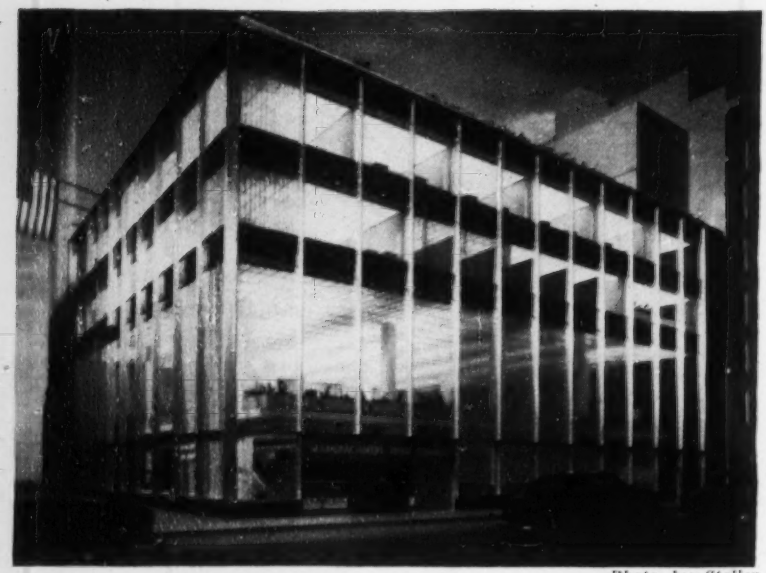


Photo by Stoller

EXPOSED to view from the street, the bank interior will be well illuminated.

Glass walls will show off bank's interior

"The design is based on the concept that banking today is selling a service"—says bank president

To achieve the owner's aim of "providing inviting quarters and an attractive atmosphere as well as to sell quality merchandise," the whole interior of a new New York branch office of the Manufacturers Trust Co., in effect, will be a display window. Walls on two street sides of the $3-million building are made of glass and columns are set back, yielding an unobstructed view of banking facilities, including the vault.

To be completed in late spring or early summer, the four-story-and-penthouse structure is located in midtown Manhattan—on the southwest corner of Fifth Ave. and W. 43d St.—on a 100x125-ft plot. Steel has been erected for the structural frame, concrete floors are being placed and the exterior is being readied to receive the glass walls.

• **Largest single sheets rolled**—Panes will be as large as 22x10 ft and ¼ in. thick, weighing 1,500 lb. Framed between light steel mullions enclosed in polished aluminum, the glass sheets will be hung from cantilevers at roof level.

Since the huge panes, probably the largest ever rolled, are used on two sides of the building, cantilevers are required on both the Fifth Ave. and 43d St. frontages. The structural design calls for steel beams in one direction and reinforced concrete joists in the other—a combination that makes it possible to keep floor depth to a minimum. Thus, steel beams for the 43d St. cantilevers extend 20 ft beyond columns, and concrete joists for the Fifth Ave. cantilevers, 11 ft. The steel cantilevers are pairs of wide-flange beams straddling the steel columns.

There are only eight columns in the interior of the main banking floor, which covers an area of 11,000 sq ft.

• **Controlled environment**—Because the panes are fixed, excluding street noise and dirt, the entire building will be air conditioned. Luminous plastic ceilings will be installed to provide shadowless illumination with low-source brightness. In addition, these will conceal the air-conditioning ductwork and heating and plumbing systems. And a coating will be sprayed behind the plastic lighting diaphragm for acoustical insulation.

The first floor of the bank will house new account officers' and tellers' space for large volume day-to-day banking transactions that require expeditious servicing, such as check cashing, payroll and special checking. Forsaking the traditional basement location, the vault also will be on this floor, in clear view of Fifth Ave. passers-by.

The main banking room for commercial accounts and senior officers will be on the second floor, reached by moving stairs. Clerical offices and the personal loan department will be located on the third floor. The fourth floor will provide space for expansion, and the penthouse will house a reception lounge, dining room and kitchen. Elevators will serve all floors.

The firm of Skidmore, Owings & Merrill is the architect. Weiskopf & Pickworth are the consulting structural engineers, and Syska & Hennessy, the consulting mechanical engineers. George A. Fuller Co. is the general contractor, with steel fabrication and erection by Ingalls Iron Works.

ENR photo by Compton

STRUCTURAL FRAMING for the new office of the Manufacturers Trust Co., New York, consists of steel beams in one direction, reinforced concrete joists in the other.

Federal backing for toll highways urged at road builders' meeting

ARBA convention also stresses equipment outlook, state maintenance contracts, and accident costs

A variety of schemes for highway financing was weighed by the American Road Builders Assn., at its annual meeting at Atlantic City, N. J., last week.

Other points rating top attention by the road builders were:

• A report showing state highway departments doing more maintenance work by contract.

• A plea for greater use of performance specifications to permit contractors to take advantage of new developments in construction equipment.

• **Financing expressways**—Representative George H. Fallon (Md.) told the meeting that more use can be made of bond financing for needed highway facilities. He favors less restrictions on the use of tolls from existing facilities, citing as an example continuation of tolls on the Bay Bridge at San Francisco to facilitate construction of a second crossing.

The means used to get public acceptance of methods proposed to finance Milwaukee's expressways and New Jersey's Garden State Parkway were described by Raleigh Gamble, director of expressways in Milwaukee, and by W. L. Braybrooke, assistant chief engineer of the New Jersey Highway Authority.

Bond financing of toll highways was discussed by Charles S. Garland, partner of the Baltimore banking house of Alexander Brown & Sons. In addition to the use of bonds supported solely by income from the toll highway or the use of bonds with state backing, Mr. Garland cited two other possibilities. These are (1) Granting federal aid to toll projects that are unable to demonstrate enough potential income to be self-supporting, and (2) placing federal credit back of bonds subordinated to revenue bonds issued to pay part of the cost of the project. In the latter case, all costs to the federal government would be repaid by the continuance of the tolls for that purpose after the revenue bonds had been paid off.

Mr. Garland cautioned against use of state credit for that purpose because of the risk of impairing that credit for other purposes such as schools. States that dedicate all gas tax income to highway work could assign part of that income to support bonds instead of using full state credit.

Federal grants, Mr. Garland said, are more appropriate for free highways.

• **Equipment outlook good**—Many aspects of the outlook for manufacturers of road building equipment were presented at a symposium sponsored by the Contractors and Manufacturers divisions. M. B. Garber of the Thew Shovel Co. said that the potential market should keep the manufacturers operating at a high level.

Mr. Garber recommended greater use of performance specifications to permit contractors to take advantage of new developments in construction equipment. He cited embankment construction as an example. If the desired density is specified instead of so many passes of a prescribed sheepsfoot roller, contractors generally can cut their bid by using one of the newer pneumatic rollers.

The need for more attention to obsolescence of road building equipment was stressed by C. W. Smith of the Smith Engineering and Construction Co., Pensacola, and H. A. Radzikowski of the Bureau of Public Roads. Mr. Smith also stressed the need for alertness to new developments in equipment on the part of contractors (e.g. slip-form concrete pours and vibrators for placing base courses).

• **Compaction equipment**—Recent developments in vibrating equipment also came up for discussion in an evening session devoted largely to soil compaction. Numerous types of vibrating equipment now are under study, including rollers, and some are available commercially.

ROBERT M. REINDOLLAR, ARBA president, re-elected, as were all officers.

A. O. Williamson of William Bros. Boiler & Manufacturing Co., in discussing experience with their 50-ton pneumatic roller, expressed the opinion that the sheepsfoot roller is on its way out. Agreeing with this were John P. Moss of the Moss-Thornton Construction Co., Leeds, Ala., and Earl F. Bennett of the Koppers Co.

• **More maintenance by contract**—Encouraging reports on progress made in getting state highway departments to do more maintenance work by contract were made at the Contractor's Division meeting. Last year, about $600 million was spent on maintenance, and of this $100 million was by contract, according to C. W. McCaughey, deputy director of the Ohio Highway Department. Mr. McCaughey's state leads in this work, having done $8.8 million of maintenance in that manner last year. Ten other states have increased the amount they do by contract.

Ohio has found that increasing the amount of work done by contract releases maintenance forces for other needed work, which cannot be done by contract. Also it has decreased the maintenance force rate of expansion.

• **High cost of accidents**—The direct and indirect cost of highway accidents amounts to around $125 million annually, H. A. Radzikowski, of the BPR, told the contractors. The direct cost of highway construction accidents totaled $18 million last year, and the indirect costs will bring the total to $90 million. Accidents on maintenance work add $35 million.

Some states have accident prevention programs that pay high dividends, Mr. Radzikowski added. Texas, for example, has cut accident to one-fifth what they were when its program started.

• **Federal rate may be cut**—At a later session, forceful opinions as to the

1957 Road Show slated

Another big Road Show has been planned for Chicago in the winter of 1957 by the Construction Industry Manufacturers Assn., a division of the American Road Builders Assn.

Current plans call for holding the exhibit from Jan. 26 to Feb. 4 in the amphitheater at the Stock Yards, which is now being enlarged. The 1948 show featured 335 exhibits extending over 30 packed acres of Soldiers Field and parking areas.

need for retaining the federal tax were expressed by Representative J. Harry McGregor, Chairman of the House Subcommittee on Roads. Mr. McGregor laid special stress on the fact that the federal tax on gasoline will be cut automatically one half-cent soon unless Congress acts before that time. There is a move in Congress to block re-enactment of the one-half-cent tax, he said, and urged the ARBA members to take the matter up quickly with their local congressmen. If that tax is not retained, Mr. McGregor said, about $220 million probably will be cut from future federal aid.

• **ARBA stand endorsed**—The ARBA proposal that Congress set up a 10-year federal aid program costing upwards of $40 billion, instead of passing two- or three-year federal aid acts, was endorsed by Representative George H. Fallon (Md.) and Representative John J. Dempsey (N. M.) at the closing session of the meeting which was devoted largely to a discussion of how to finance needed highways and expressways.

At a later session, A. C. Clark, chief of the BPR Division of Engineering, gave details on what has been done to date on the whole set-up of the bureau. The western headquarters has been abolished, some divisions have been consolidated, and much more authority has been delegated to district offices, which now can take final action on much contract work, and they can make minor changes in the federal aid program for their districts. This change already has made it possible to get considerably more work under contract than would have been possible heretofore.

Mr. Clark said that the bureau also is reviewing state specifications to see whether more uniformity can be obtained in them, chiefly to eliminate unimportant variations in requirements that are costly to contractors who work in more than one state.

• **Would continue federal tax**—Strong opposition to abolition of the federal gasoline tax was expressed by two speakers at the opening session of the ARBA meeting. Representative George A. Dondero, Chairman of the House Committee on Public Works, said the elimination of that tax would be a tragic mistake as it would upset the entire federal aid program, and elimination of the federal tax might cut the available funds for road building, he added, because some states might not increase their tax by a like amount.

Mr. Dondero favors a large increase in federal aid and said he has introduced legislation calling for such an increase.

12-year road plan

Maryland sets up first year schedule of projects costing $78 million

Maryland's State Roads Commission is ready to embark on a 12-year road program (ENR April 16, 1953 p. 23) that will cost an estimated $568 million. As a starter, $78 million has been scheduled for building or improving 457 mi of highways this year.

Improvements for 1954 range from important expressway links down to work on secondary roads in each of the state's 23 counties. Most important of this year's major projects include sections of:

- The new Eastern Shore highway.
- The proposed Baltimore-Harrisburg expressway.
- The Washington-Annapolis expressway.

Improvements to U. S. Routes 1, 11, 13, 29, 40, and 301 will make up the major portion of highway renovation work in 1954.

About $51 million out of the total which has been allotted for highways this year will be spent on major primary road improvement programs.

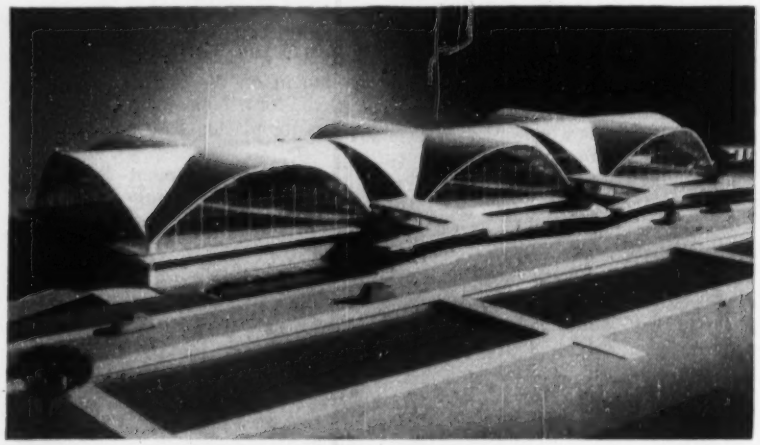
In the program, roads labeled "expressways" are more correctly "expressways-to-be": that is, eventually they will be multi-lane, divided highways, but at this time only one side of the expressway is to be built. Once the entire length of the route is completed, work will commence on the companion section to produce the divided highway.

Longest stretch on schedule this year will be the extension of the new Eastern Shore highway all the way to the Delaware state line.

One-half of a planned dual highway is to be built from Queenstown to the Delaware line. This road will be Maryland's part of the fast north-south route between the new Chesapeake Bay Bridge and the Delaware Memorial Bridge.

In addition to the $78 million earmarked for highway work this year, Maryland's Roads Commission has allocated $14 million for the purchase of right-of-way for future road construction.

A boost in the state gasoline tax from 5 to 6 cents per gallon and higher licensing fees for vehicles will help to pay for the road building program.



Work to start on barrel-arch roof

Weather permitting, concreting will start Feb. 1 on the three sets of intersecting thin-shell barrel arches that will form the roof for the new $4.5-million airport terminal building being constructed at St. Louis, Mo. (ENR Jan. 29, 1953, p. 52).

With a glass wall facing the airfield and a brick wall on the opposite side, the three-level, reinforced concrete structure will be 415 ft long and 120 ft wide.

Provision already has been made to double the length of the terminal should it become necessary in the future.

The reinforced concrete roof shells will be 32 ft high at the crown and will be 4½ in. thick throughout. Edges of the arched barrels will have rib stiffeners, and concrete beams, 18 in. wide and about 7 ft deep at the spring line, will reinforce the barrel arches along the lines of intersection.

Approximately a third of the concrete roof framing is completed and the entire building is scheduled for completion some time in the spring of 1955.

Architects for the terminal are Hellmuth, Yamaski & Leinweber, structural engineer is Wm. C. E. Backer, and the contractor is L & R Construction Co., all of St. Louis.

T-H changes would legalize labor-contractor practices

American Federation of Labor building trades unions stand to benefit more than the rest of organized labor under the Taft-Hartley amendments proposed by President Eisenhower this week.

Several White House-proposed changes were aimed specifically at relieving difficulties that construction union leaders have been complaining about. These amendments which would legalize current practices, would:

- Allow builders to make contracts with unions before any workers are hired for the project. The unions would then represent the employes in collective bargaining as the project got under way.
- Permit unions to make a union shop agreement with management that would require the employes to join the union within seven days. The current waiting period is a minimum of 30 days.
- Legalize what is interpreted currently as an illegal secondary boycott practice where union strike activity against one employer on a project affects other contractors. This no longer would be treated as a secondary boycott and thus no longer be subject to a quick injunction.

Pre-eminence over state labor laws of Taft-Hartley changes dealing with pre-job contracts and union shop—considered a must by the AFL Building Trades Department—was not included in the President's recommendations. Instead, definition of state's rights in dealing with labor was left fuzzy.

• **Special treatment**—These changes were called for because of the special nature of the construction industry, where projects are often completed before employers and unions can come to terms on an agreement under the waiting periods required by the labor-management law.

In singling out the construction industry for a series of relaxations on union activities, the President was sure to find some union support in his corner. Building trades leaders probably will back these proposals to the hilt.

However, on the message as a whole, organized labor found only a few things to cheer about. The Administration would eliminate the mandatory injunction in secondary boycott cases and make it plain that unions can take action against an employer doing "farmed-out" work for another employer who is being hit by a strike.

Other "liberalizing" proposals, many of which were contained in the 19-point program supported by former Labor Secretary Durkin, would restrict management and rival union attempts to replace a union conducting an economic strike; extend the non-Communist oath to employers; relieve unions of responsibility for the actions of their members when not acting in behalf of the unions.

• **Hard to swallow**—However, the President's proposal that employes vote secretly—under government auspices—on whether to strike or not would hit the unions hard. There had been no hint that this proposal was forthcoming, and this amendment in itself is enough to make the unions hope that Taft-Hartley would go unchanged rather than to include all Administration amendments.

Eisenhower's plans for looking into the issue of states' rights and the federal labor law, and his urging Congress to investigate the operation of union pension and welfare funds will keep the Taft-Hartley Act at fever pitch for the next few months.

The President's T-H package re-enforces the belief that there will be a stand-off in Congress—leaving the current law on the books. There is a possibility that limited amendments could get through. If so, some of the changes directed at the construction industry may be adopted.

But if the law is opened up for change, labor will fight bitterly against the secret strike vote proposal; management will contest the attempt to drop the mandatory injunction and ease secondary boycott restrictions. It could be a draw—with neither side displeased if Taft-Hartley stays as it is.

Firm building with own crew loses round to Electricians

Electricians—armed with a favorable court ruling—have begun their second month of more or less successful picketing in an effort to prevent a Michigan manufacturing company from finishing its new factory with non-union plant maintenance crews.

Pontiac Coach Co., a maker of house trailers, engaged a building contractor—using union carpenters, masons and laborers—to put up the shell of its factory at Drayton Plains, Mich. Then Pontiac—an unorganized shop employing about 360 workers—put its own maintenance force to work to finish the job.

Local 58 of the International Brotherhood of Electrical Workers started picketing the projects, contending that its members should be doing the new work going on inside.

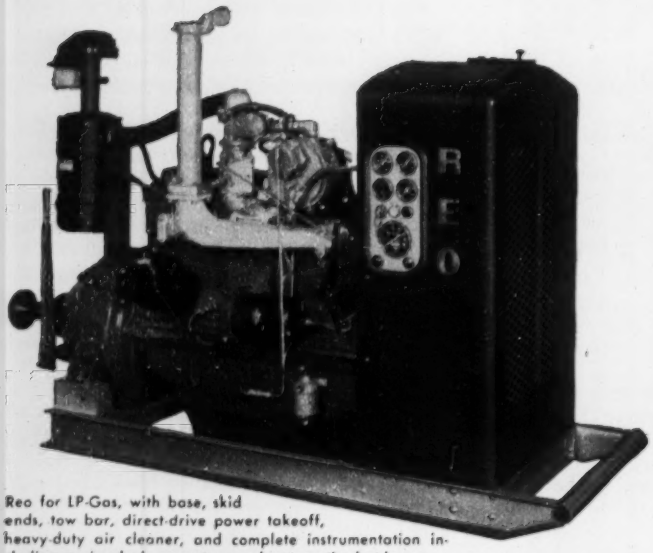
The picketing took hold when AFL Teamsters—which may try to organize the plant—refused to truck equipment and supplies through the IBEW's lines, and employes of a heating contractor working on an adjoining office structure refused to pass the pickets.

Pontiac Coach went to court to get an injunction against the IBEW pickets, and came out empty-handed. Circuit Judge Thomas Murphy took quick action because the case involved construction, lest Pontiac Coach finish the job before the case could be fully heard. The company said it will seek an injunction from the state supreme court.

Labor briefs . . .

• **Walkout in Washington**—More than 2,000 AFL carpenters and millwrights in the Pasco-Kennewick-Richland areas of eastern Washington state stopped work last week after failing to reach a new contract agreement with contractors. The union wants a 15-cent hourly wage increase over the contract that expired in December. This boost would bring scales up to $2.80 for journeymen carpenters, and up to $3.05 for millwrights. So far contractors have offered to make permanent a temporary 5-cent-an-hour raise given last March.

• **Conciliator steps in**—A federal labor conciliator has gone to work in Seattle in an attempt to break a deadlock in contract negotiations between the AFL sheetmetal workers' union and employers in the building trades. The union is seeking a 34½-cent package increase, including 27 cents an hour in wages and a 7½-cent hourly vacation allowance. In the same area, carpenters and cement masons recently won wage increases. Carpenters got a 7-cent hourly raise plus 10 cents for a welfare plan, bringing their scale up to $2.65 an hour. Cement masons received a 14-cent raise (7 cents of this taking the place of a welfare plan), bringing their scale up to $2.72.



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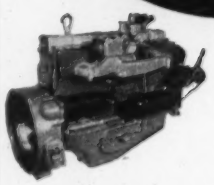

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INDUSTRIAL & MARINE ENGINE DIVISION

REO MOTORS, INC., Lansing 20, Michigan

Aluminum Co. of Canada photos

LAST FLOATING SECTION of 760-ft wharf goes into place (background) against pile-cluster guides. To rest on bottom, structure will carry gantry crane and two railroad tracks for unloading ocean-going ore ships serving Kitimat, B. C. aluminum plant.

Wharf built in dry, floated to place

Alcan's British Columbia hydroelectric aluminum refining project, which stretches from Kitimat, at Pacific tidewater, to Nechako River, 150 mi inland, abounds with construction news. Even the ore-unloading wharf at Kitimat was a special problem. Heavy tides, cold water and marine borers led to choice of caissons, which had to be built on their sides and careened to place.

Leonard E. Van Houten
Frederic R. Harris, Inc.
New York, N. Y.

Equivalent in displacement to three 10,000-ton ships, sections for an ore-unloading wharf were cast on their sides in a shallow basin, floated, careened, and sunk to place at the new Aluminum Company of Canada (Alcan) plant at Kitimat, British Columbia. The three 45 x 61 x 250-ft reinforced concrete boxes were assembled into a 760-ft wharf to provide 35-ft minimum berthage where the tide range may be nearly 30 ft.

Original idea for wharf construction was to build a rock mole and a pile-supported timber wharf. But the presence of marine borers foredoomed timber to a short life, and such a structure could not be replaced readily, since driving piles through a fill of large stones is not practicable procedure.

Based on its experience with vessels like drydocks, Frederick R. Harris, Inc., consultant to Alcan, suggested the idea of sinkable concrete boxes. A comparative estimate showed a lower first cost than for other wharf types, and there would not be heavy maintenance or replacement costs. A major problem, however, was lack of sufficient water depth to float the caissons in an upright position at the casting site.

Casting the boxes on their sides was the obvious way to reduce draft, but such an approach introduced problems of careening. However, careening caissons was not a serious problem for Harris engineers, who during World War II had devised means for turning 18,000-ton capacity floating drydocks on edge for passage through the Panama Canal (ENR May 5, 1949 p. 12).

This solution became still more compelling when conditions at the B. C. site were considered. Kitimat has a reasonably protected harbor, but normal tide range is 20 ft and winwhipped waves may add 7 ft. Such conditions would have made pile-driving difficult and expensive. Moreover, design was under way at the time of hostilities in Korea, when availability of H sections or pipe for piles was uncertain. As to tremie concrete construction, the water is quite cold all year; concrete placed underwater in such temperatures sets slowly so tremie work was undesirable. The caissons required less reinforcing steel and concrete than a pile-supported relieving platform or other type wharf. So, floatable concrete boxes or caissons, sunk to a prepared bed and loaded to retain fill on the shore side, became the most practicable solution. Space was available nearby for the equivalent of a graving dry dock in the form of a simple earth basin.

Preliminary designs and construction estimates were made for caissons of different lengths and shapes. Lengths of 100 ft rather than 250 ft had the advantage of ease of handling, but the larger number of units

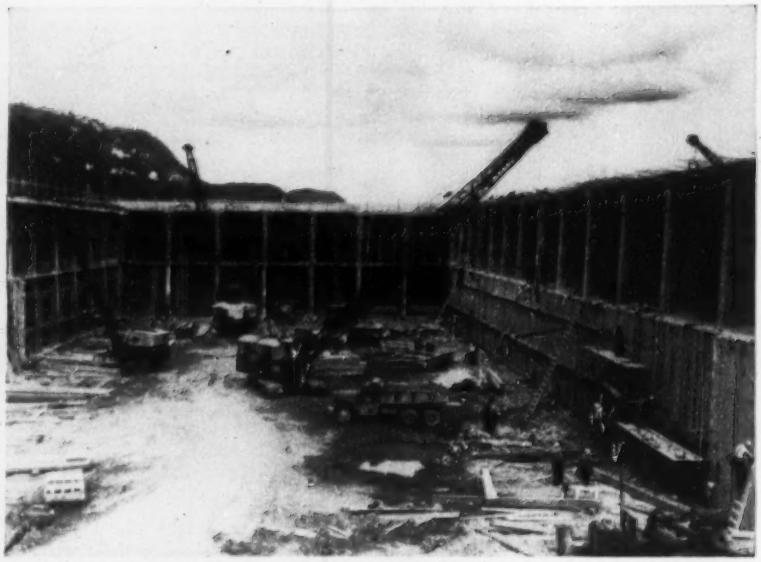
was uneconomical. Connected circular cells of concrete would have saved material but were difficult to form. Slip-forming for all shapes was considered, to reduce or eliminate construction joints exposed to salt water and tide action—but that problem was solved in another way, to be described later. The deciding factor, finally, was the amount of tide range. This, plus berthing requirements, meant that the wharf had to be more than 60 ft high.

In turn it was necessary to select the shape that would best resist overturning pressures of earth fill on the shore side. Studies showed that the soil would carry the toe pressures of a 61-ft differential head of earth if aided by a 4-ft extension of the base and back-sweep of 2 ft from the vertical in the caisson. Pressures were reduced by use of pervious fill material (underneath and behind the caisson) and drainage to low-tide level. Exterior walls are 14 in. thick; transverse bulkheads at 19-ft centers are 8 in. thick; a full-length longitudinal bulkhead increases from 6-in. thick at the top to 12 in. at the bottom. These walls established 26 vertical cells in each caisson, and stiffened them for handling.

• **Drydock**—Adjacent to the wharf site was an area large enough to accommodate construction of three 250-ft long sections in a basin. Existing ground was a little above low-tide level. Natural soil was not impervious enough for a completely water-tight berm around the basin, but with a bottom near low-tide level full head would be against it only part of the day. No serious damage could result from a try, so part of the necessary excavation was bulldozed into a compacted berm to form the basin walls. The cheap berm construction was reasonably successful, with the bottom of the basin only somewhat below low-tide level, but even then much extra pumping was necessary.

In such a basin, a water depth at high tide of only 22 ft could be depended upon for floating completed caissons. A 60-ft high vessel would have a draft of more than 30 ft, so casting them on their sides and careening them was adopted.

By putting two temporary timber bulkheads at and near the open side of the box (later to become the top) it could be ballasted with water to float level at about 19-ft draft for removal from the basin. When in deep water, the ballast could be released to flow to the bottom of the box and tilt it toward the upright position. The caisson side that had been cast on the ground would be turned so it came in contact with the fill. The other



CELLULAR BOXES—As they lie on their sides in dry basin these caissons look more like prison cell blocks than the wharf units they will become when floated to place. A temporary bulkhead for controlled-buoyancy careening appears at right.

61 x 250-ft. side, the top of the box as constructed, would be exposed to tidewater. Here concrete could be placed as a horizontal slab, without construction joints or honeycomb, and carefully finished to give an excellent surface to resist action of moving seawater.

• **Construction**—For caisson work in the basin, concrete was trucked from a central plant and placed by buggies or bucket and crane. Work was done during the winter months but temperatures were not extreme and moderate heating protected the concrete.

Next, floating and setting the boxes was a rapid and trouble-free operation. Weight of the boxes and center of gravity were determined. To counteract the weight of the closed side, which was to become the bottom, the temporary bulkheads were placed so as to make a 13.5-ft wide tank at the open side, and fittings were installed in each bulkhead for control of water-ballasting. To aid in maintaining exact ballast, bulkhead leakage was controlled by canvas placed on the pressure side. Small pumps stood by to remove excess water.

• **Boxes trimmed carefully**—As a precaution, trial floating of each box was done prior to opening up the basin. This was accomplished by opening gates on large pipes through the berm and permitting the rising tide to fill the basin at a controlled rate. A little less than the estimated amount of ballast water required was admitted between the temporary bulkheads. As the caisson became buoyant the ballast was adjusted so the boxes floated with very little list or trim—a necessary procedure as bottom clearance was small.

Mooring lines prevented the caissons from moving, and the next falling tide permitted the boxes to be reseated in their original position. Flooding pipes into the basin were left open to equalize the water. Open valves into the caissons prevented flotation.

Next operation was to make a 120-ft. wide opening into the basin with draglines to permit towing the caissons out. Caissons were floated as tide approached full. After the first one was towed outside the basin, the valves in the inside ballast bulkheads were opened and the water allowed to go to the bottom of the box to start careening. (See drawing.) Care was exercised to assure even flow of water, to prevent unequal stressing of

Other ENR articles on B. C. project

Setting up shop in the wilderness for huge aluminum hydro project	**Sept. 25, 1952, p 32**
World's largest underground power plant	**Nov. 13, 1952, p 31**
Aerial tramway serves Kemano tunnels	**Nov. 20, 1952, p 42**
Renaissance in rockfill dams (partly about Kenney Dam, on Nechako River)	**Jan. 22, 1953, p 35**

Moving Day for the St. Lawrence

Shaded area shows additional facilities which will increase Beauharnois' production to more than 1,400,000 h.p.

MOVING A RIVER may sound fantastic, but the Ellicott-designed "Hydro-Quebec," world's largest hydraulic pipe line dredge, has begun work on a project that will eventually divert practically the entire flow of the St. Lawrence River! The project is part of the expansion program of the Quebec Hydro-Electric Commission. When completed, the Commission's installation at Beauharnois, Quebec, will be the largest single-site hydro-electric plant in the world, with electrical output of more than two million horsepower.

Main work of the "Hydro-Quebec" consists of widening and deepening the 15-mile Beauharnois Canal to provide the necessary volume of water to operate the plant. This channel will also serve as a navigation canal which, when tied in with the proposed St. Lawrence Waterway by locks, will permit passage of ocean going vessels.

* * * *

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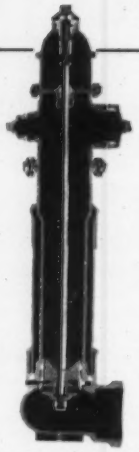

The Mathews includes every quality feature . . .

Compression type valve to prevent flooding • Head turns 360° simply by loosening bolts • Replaceable head • Nozzle sections easily changed • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • A modern barrel makes an old Mathews good as new • Mechanical-joint pipe connections as needed

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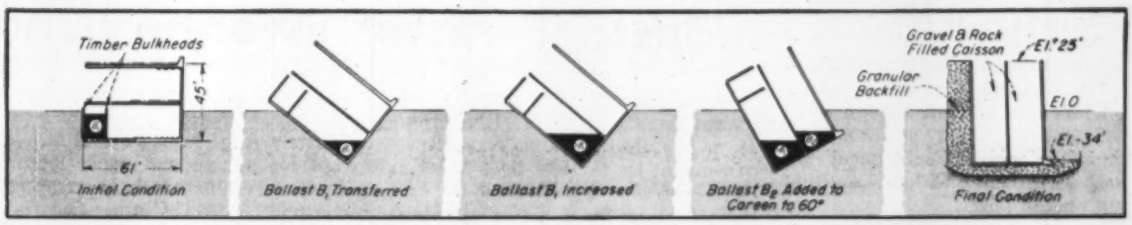
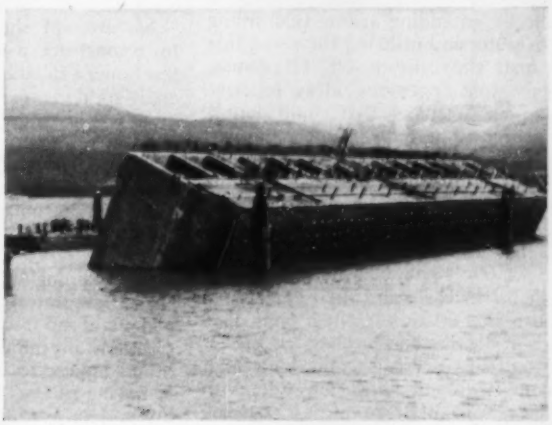


CAREENING PROCEDURE begins with flooding between timber bulkheads, as shown in left sketch (black). This counterbalances concrete wall that will become wharf bottom, and allows caisson to move from shallow basin to deep-water wharf site, where subsequent steps take place.

ONE OUT, TWO TO GO—First wharf section is partly careened in its berth at left. Second section has been moved shoreward across building basin (right) and is ready for towing through 120-ft-wide breach in berm. Third one lies in its original position.

DRY DOCK for wharf is a bulldozed rectangular berm. Its bottom is near low-tide level, more than 20 ft below normal high tide.



TWO-THIRDS careened, wharf section is ready for final descent. This side will be backfilled.

the long floating box. The partly-careened position was the most stable, and it offered least resistance to wind while keeping the temporary timber bulkhead above water.

On succeeding tides the other caissons were shifted, first to the casting location of the first box removed, in direct line with the exit, and then out of the basin. Only a short time was available each tide for maneuvering, as a minimum of water depth was available for flotation.

A 6-in. pump lifted water to the top of the caisson, where a full-length pipe header with 1-in. valves at each compartment made control of ballast water for sinking easy. Fill by gravity through valves in the bottom could have been used but it gave less positive control of operations.

With the caisson partly careened by permitting the original ballast water to flow to the bottom, the pumps were used to add water in the same compartment to sink the low edge to about the 36-ft draft. This was necessary to insure stability in the final upright position. Water in adjacent compartments was kept within a foot of equal, and trim of the box was held within a foot for its full length. Next, water was pumped into the upper compartments to bring the caisson vertical at 33-ft draft.

• **Final placement**—About an hour before low tide, the caisson was accurately positioned and evenly ballasted to eliminate transverse list within 0.1 ft and longitudinal trim within 0.5 ft. Ballast was added to increase the draft to about 1 ft greater than the depth of water predicted at low tide. As the tide ebbed the caisson settled on the bottom; plugs in weep holes below the water level were knocked out and water pumped in from the top to fill the caissons ahead of the rising tide. (If the boxes had not set down accurately they could have been lifted by the tide and positioned again.) As soon as possible, fill was put in caissons to assure their staying in position.

Ends of the caissons were designed to have an opening of 5 ft between them, with the water side closed down

by 2-ft projections, to about 1-ft opening. Selected rock was used for fill in this space to form a barrier that would keep the shoreward fill from washing out. This type of joint allowed some misalignment in setting and would accommodate itself to subsequent unequal settlement without putting strain on the boxes.

After sinking, the top of the caissons was just above high tide. Provision had been made to construct an additional 5-ft high reinforced beam on the water side to act as a sea wall; other beams carry the rails for a 32-ft gage gantry crane. Two railroad tracks are supported on pervious fill dumped into the boxes.

• **Other ideas**—During the planning period, casting the caissons on floating dry docks was considered. A sectional timber drydock was available at Prince Rupert, 100 miles away. However, in addition to towing there was a problem of preventing any movement of the dock while concrete was being placed and until it attained substantial strength. Rigid barges, too, could have been used as drydocks. Launching would have been done by grounding at low tide, filling with water and utilizing the rising tide to float the caissons off. Of course, there were ingenious ideas to have valves in the barge that could permit discharge of water without pumping for floating the barge on the next tide. It was not practicable to use this method for 250-ft sections and it was estimated to be more expensive overall than the method used. Two half-height boxes could have been cast in a shallower basin and then one placed above the other but there were hazards in floating and leveling the pieces. Also discussed was a section only high enough to come above low tide, with upper walls built in place. Working at the dictates of the tide, possible storms and slow setting of concrete in cold water were against this procedure.

The method followed proved quite successful and economical. The wharf is now complete and in use.

Design was done by the Aluminum Company of Canada's own forces at Montreal under the direction of W. L. Pugh, Chief Engineer. Construction was handled from a newly established Vancouver office directed by P. E. Radley, project manager and H. C. Jenkinson, chief resident engineer. At the Kitimat site, George T. Malby was Resident Engineer. Engineering by Frederic R. Harris, Inc. was supervised by Christopher J. Murphy, assisted by the writer.

Contractor was Kitimat Constructors, a joint venture of several British Columbia contractors, for whom H. M. Whiting was project manager.

Industrial wastes inventory shows

In making the 1953 inventory of sewage disposal facilities (ENR Oct. 15, p 37), ENGINEERING NEWS-RECORD sought for the first time to get a picture of what is known of the nation's facilities for disposing of industrial wastes. The table on the facing page is part of that picture.

ENR's inventory of sewage disposal facilities (this was the fifth since a pioneer version in 1929) has come to the point where most states, given a short period of time, can respond with the wealth of detailed information asked. The national picture of progress in disposing of domestic liquid wastes is now in clear focus.

Not so with industrial wastes. The table opposite represents answers to only three questions of six asked on industrial wastes in the 1953 inventory. It is hardly a complete picture. In the first place, of 45 states responding to the sewerage questionnaire, only the 31 in the table gave answers to the questions on industrial wastes. And even the answers given are not complete.

No attempt should be made here to reconstruct a dinosaur out of a few bones (and a lot of plaster). Generally speaking, over the United States as a whole, there are not sufficient data on record to give a clear picture of existing or needed industrial waste disposal facilities. Consequently, there can be no accurate measure of progress.

• **Silver lining**—It should be noted that a few states do have a very complete and up-to-date record of their situation in industrial wastes. And others appear to be well on the road to having the facts necessary to fostering and measuring progress in industrial waste disposal.

Illinois, Indiana, Iowa, Minnesota, Pennsylvania, Washington, and Wisconsin, of the more industrialized states, appear from questions answered in this inventory to be among the states best informed on the industrial wastes going into their waters. Illinois, for example, is able to estimate closely the volume of wastes produced (mgd) for each industry listed. It knows roughly what percentage of each of these wastes is adequately treated.

This state, Illinois, at present has no industry under order to build disposal works. Yet its complete answers to questions posed in ENR's questionnaire give evidence of success in bringing about proper disposal of industrial wastes:

With volumes of wastes ranging from 0.2 mgd in the automotive industry to 34.5 mgd in fermentations, percentages reported to be treated adequately range from 91 to 100%—except for mining and paper industries, both estimated to be treating adequately 75% of their wastes. (These figures are for the state of Illinois exclusive of the Chicago Sanitary District; the district reports 180 mgd of industrial wastes adequately treated, 10 mgd subject to pick-up under its present program.)

Several of the less industrialized states have the picture of their industrial wastes fairly well in focus. Questions answered indicate the situation pretty much in hand in Arizona, Louisiana, Mississippi, Nevada, New Mexico, North Dakota, South Carolina, South Dakota, and Tennessee.

It should be noted, too, that more is known of the industrial wastes picture than answers to this pioneer survey indicate. Texas, for instance, reported the information not readily available in the form requested. North Carolina reported itself now at work compiling industrial wastes data. Ohio and California, among three states not replying to the inventory of sewage disposal facilities, gave as their reason pre-occupation with the systematic recording of just such information as the questionnaire sought.

Also, efforts to collect data on industrial wastes are being made by inter-state agencies. The Ohio River Valley Water Sanitation Commission leads all others in building up a file on industrial wastes.

• **But still cloudy**—Overall, much remains to be learned of the industrial waste problem, its size, its scope, and of progress toward its solution. Relatively few regulatory agencies appear yet to have their industrial wastes problem so clearly defined as they have done in regard to the domestic sewage problem.

In most states it is the health department that keeps track of sewage disposal. In several states the problem of industrial wastes is assigned to a second agency. This is the Fish and Game Commission in Mississippi, the Stream Control Commission in Louisiana, the State Water Commission in Connecticut, the Pollution Control Commission in Washington and the Water Resources Commission in Michigan.

A conclusion comes from one state sanitary engineer that seems to sum up the picture nationwide:

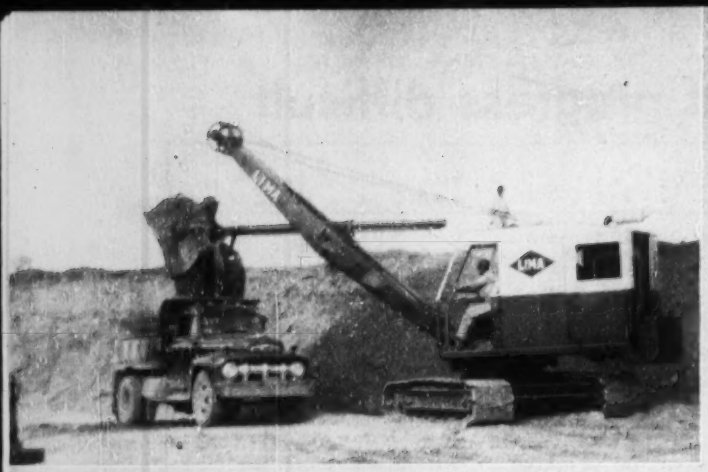
"As you can see, considerable work remains in the determination of our industrial waste problem."

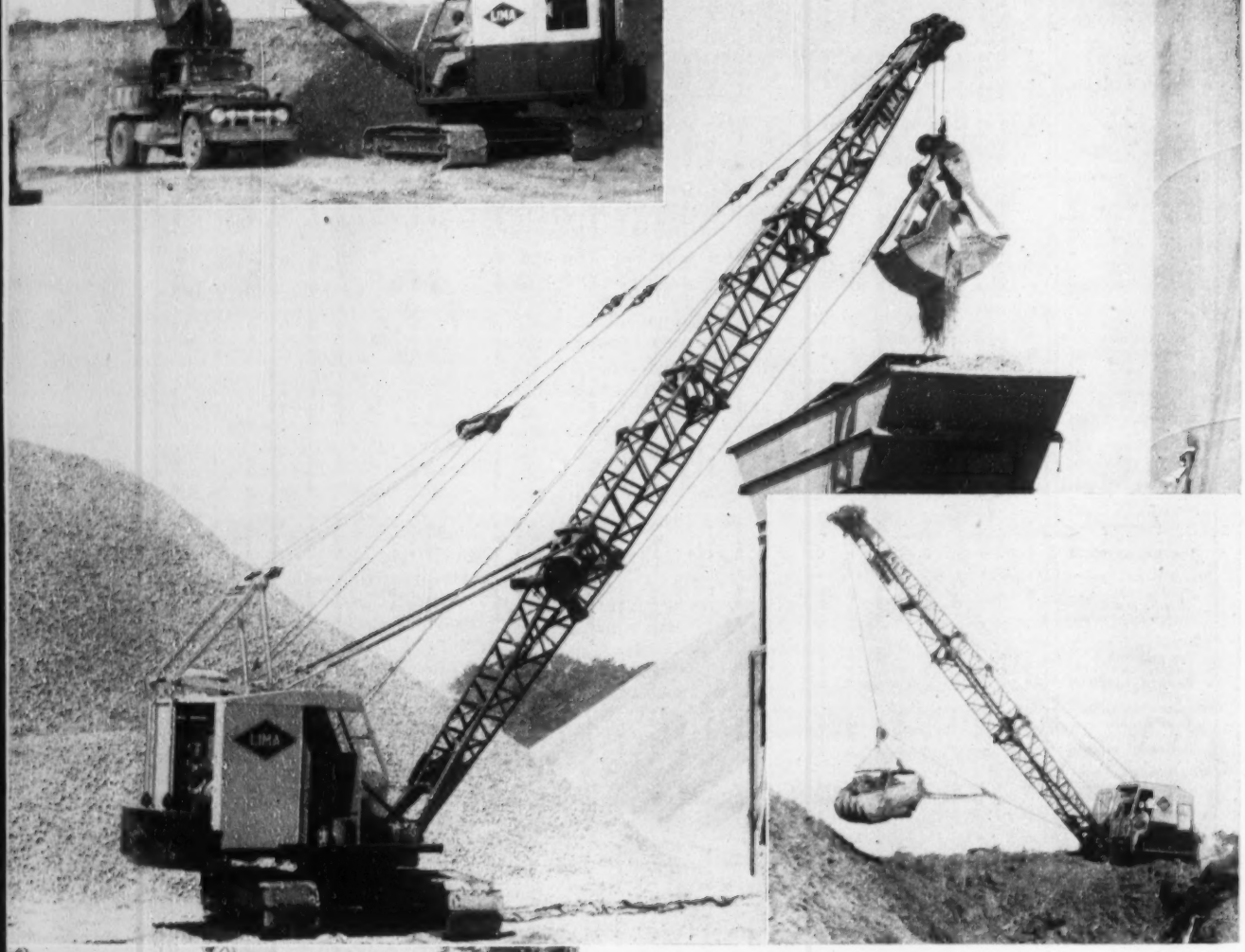
facts lacking, measure of progress difficult

Industries	Ala.	Ariz.	Ark.	Del.	D.C.	Fla.	Idaho	Ill.[23]	Ind.	Iowa	Kan.	Ky.[7]	La.	Mass.	Minn.[9]	Miss.	Mo.	Mont.	Neb.	Nev.	N. J.	N. M.	N. D.	Ore.	Pa.	S. C.	S. D.	Tenn.	Wash.	W. Va.	Wis.
Automotive																															
Producing wastes	0	0	0	2	0	0	0	3	8	0	0	1	0		0	1	4	0	0	0		0	0	0	0	0	0	3	0	0
Adequately treating	0	0	0		0	0	0	1	2	0	0	1	0		0	0	1	0	0	0		0	0	0	0	0	0	3	0	0
Discharging to city plants	0	0	0		0	0	0	3	3	0			0		0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Beet sugar		*																												
Producing wastes	0	0	0	0	0	0	5	0	0	1	1	0	0	0	3	0	0	4	4	0		0	0	1	0	0	1	0	2	0	1
Adequately treating	0	0	0	0	0	0		0	0	1		0	0	0	1	0	0	0	0	0		0		0	0	0	1	0	2	0	
Discharging to city plants	0	0	0	0	0	0	0	0	0				0	0	0	0	0	0	0	0		0		0	0	0	0	0	0	0	
Canning																															
Producing wastes	6	10	91	42	0	103	12	27	156	31	0	1	10	67	30	3	12	4	3	0		0	0	50		43	0	14	128	3	145
Adequately treating		0	1		0			17	116	22	0	1	5	10	17	0	4	0	0	0		0	0	12	14	12	0		49	1	83
Discharging to city plants	6	9	2		0		0	8	21		0		3	46	1	0	2		3	0		0	0	21		25	0		43		38
Chemicals																															
Producing wastes	8	7	5	5	0	0	5	20	10	9	4	14	13	29	32	23	5	8	1	1		0	0	0		1	0	21	17	26	0
Adequately treating		1	0		0	0		9	9	0		9	12	2	18	0	0	0	0	0		0	0	0	20	1	0		9	5	0
Discharging to city plants		5	0		0	0	0	3	1				0	13	5	0	0	0	1	0		0	0	0		0	0		4		0
Dairy																															
Producing wastes	58	35	14	0	19		30	300	75	48	20	16	25	86	737	10	21	31	180	9		35	0	0		32	20	38	168	108	1,900
Adequately treating		4	1	0	0			7	15	3	1	7		7	7	0	3	0	0	1		34	0	0	24	10			51	3	600
Discharging to city plants	46	8	6	0	19		0	147	10		15			77	236	0	8		180	7		25	0	0		22	18		79		900
Distilling																															
Producing wastes	0	0	0	0	0	0	0	5	7	0	0	20	0	22	0	0	3		0	0		0	0	0		0	1	1	0	0	2
Adequately treating	0	0	0	0	0	0	0	4	3	0	0	8	0	1	0	0	0		0	0		0	0	0	7	0	0		0	0	
Discharging to city plants	0	0	0	0	0	0	0	1	0	0	0		0	20	0	0	0		0	0		0	0	0		0	0		0	0	1
Electric																															
Producing wastes	0	1	0	0	0	0	1				0	0	0		0	0	4			0		0	0	0		0	0	0	0	8	0
Adequately treating	0	1	0	0	0	0	0				0	0	0		0	0	0			0		0	0	0	14	0	0	0	0	2	0
Discharging to city plants	0	0	0	0	0	0	1				0	0	0		0	0	0			0		0	0	0		0	0	0	0		0
Electroplating																															
Producing wastes	0	3	0	0	27	0	0	33	26		0	3	0	28	9	0	50	0		1		0	0	0		0	0	7	10	4	26
Adequately treating	0	2	0	0	0	0	0	3	11	3	0	1	0	1		0	2	0		0		0	0	0		0	0		3		
Discharging to city plants	0	1	0	0	27	0	0	26	5		0		0	14	5	0	0	0		1		0	0	0		0	0		6		25
Fermentations																															
Producing wastes	0	2	0	0	2	0	2	14	7	1	0	0	6		19	0	9	7	3	1		0	0	0		1	0	0	0	1	50
Adequately treating	0	2	0	0	0	0	0	5	0	0	0	0	0		10	0	0		0	0		0	0	0		1	0	0	0		
Discharging to city plants	0	2	0	0	2	0	1	8	1		0	0	4		5	0	0		3	1		0	0	0		0	0	0	0		43
Iron & Steel																															
Producing wastes	8	4	0	1	0	0	0	38	46	1	0	5	0		2	0	2		0	0		0	0	0		0	0	1	5	10	0
Adequately treating		1	0		0	0	0	5	20		0	3	0		0	0	0		0	0		0	0	0	58[16]	0	0		3		0
Discharging to city plants		3	0		0	0	0	18	5		0		0		0	0	0		0	0		0	0	0		0	0		2		0
Lumber																															
Producing wastes	0	100	3	1	0	0	75	0	2		0	0			0	0	5	3	0	2		0	0	0		16	0		1,000		0
Adequately treating	0	80	0		0	0		0	0		0	0			0	0	0	0	0	2		0	0	0		3	0	0	931		0
Discharging to city plants	0	0	0		0	0		0	0		0	0			0	0	0		0	0		0	0	0		13	0	0	0		0
Mining																															
Producing wastes	0	28	5	0	0	0	40	40	28		3	68	7	0	291	0	4	10	0	3		30	0	0		0	2	6	37	750[21]	0
Adequately treating	0	23	1	0	0	0	10	23	12		0	26	7	0	154	0	1	0	0	3		30	0	0	194	0	1		24		0
Discharging to city plants	0	0		0	0	0	0	0	0		0		0	0	0	0	0		0	0		0	0	0		0	0		0		0
Meat packing																															
Producing wastes	46	18	79	10	14	11	75	58	57	24	20	7		33	77	9	31	6	281	7		17	7	0		187	7	25	206	54	475
Adequately treating		2	3	1	0			8	20	2				4	2	0	1	0		5		11	1	0	3	37	1		124		
Discharging to city plants	31	2	0	2	14			41	9		18			26	50	0	10			0		6		0		126	6		39		
Non-Ferrous metals																															
Producing wastes	3	23	83	0	0	0	2	12	3	2	6	3	1		1	0	1	5	0	0		0	0	0		0	1	3	4	6	0
Adequately treating		21	0	0	0	0		2	1	1	3	3	1		1	0	0	0	0	0		0	0	0		0	1		4		0
Discharging to city plants		0	21	0	0	0	0	6	0		5		0		0	0	0	0	0	0		0	0	0		0	0		0		0
Petroleum																															
Producing wastes	3	0	0	0	0	0	0	10	11		16	4	7		3	0	1	7	0	0		12	0	0		0	0	2	4	3	3
Adequately treating		0	0	0	0	0	0	10	17		0	3	6		2	0	0	5	0	0		12	0	0	19	0	0		4		3
Discharging to city plants		0	0	0	0	0	0	0	0				0		0	0	0	0	0	0		0	0	0		0	0		0		
Pulp																															
Producing wastes	0	0	3	0	0	9	14	0	0	0	0	0	7	56[4]	7[4]	0	0		0	0		0	0	9		0	0	0	20	0	33
Adequately treating	0	0	1	0	0	6		0	0	0	0	0	5	8[4]	2[4]	0	0		0	0		0	0	6	30[4]	0	0	0	8	0	15
Discharging to city plants	0	0	0	0	0	0	0	0	0	0	0	0	0	5[4]	0[4]	0	0		0	0		0	0			0	0	0	0	0	4
Paper & board																															
Producing wastes	5	0	0	8	0	0	0	17	17	2	2	0	7			6	3		0	0		0	0	0		3	0	5	14	5	42
Adequately treating		0	0		0	0	0	7	5	1		0	5			0	0		0	0		0	0	0		1	0		14		29
Discharging to city plants		0	0		0	0	0	3	2			0	0			0	0		0	0		0	0	0		0	0		0		6
Rubber																															
Producing wastes	1	0	0	0	0	0	0	3	4		0	3	2	6	0	1	0		0	0		0	0	0	0	0	0	0	4	1	16
Adequately treating		0	0	0	0	0	0	0	2		0	1	2	0	0	0	0		0	0		0	0	0	0	0	0	0	4		0
Discharging to city plants		0	0	0	0	0	0	2	0		0		0	4	0	0	0		0	0		0	0	0	0	0	0	0	0		16
Tanning																															
Producing wastes	0	0	0	0	0	0	0	2	3		0	1	0	107	2	0	2	0	0	0		0	0	0		0	0	3	2	4	24
Adequately treating	0	0	0	0	0	0	0	2	0		0	1	0	0	1	0	0	0	0	0		0	0	0	3	0	0		1	4	0
Discharging to city plants	0	0	0	0	0	0	0	0	1		0		0	105	1	0	0	0	0	0		0	0	0		0	0		1	0	24
Textiles																															
Producing wastes	33	0	0	1	0	0	0	6	3		0	3	0	264	15	3	1		0	0		0	0	0		305	0	29	1	5	0
Adequately treating		0	0		0	0	0	0	0		0	1	0	12		0	0		0	0		0	0	0	15	90	0		1	3	0
Discharging to city plants	14	0	0		0	0	0	5	1		0		0	95	10	0	0		0	0		0	0	0		175	0		0		0
Other																															
Producing wastes		4[1]			19[2]	11[3]	8[2]	71[2]	42[2]	31[5,6]		14[2]	67[8]		3[10]	5[11,12]		1[13,14]		3,465[15]					59	1[16]	3[19]	52	67[20]	201[22]	
Adequately treating		2[1]			2[2]		2[2]	7[2]	19[2]			6[2]	10[8]							109					59[17]	1[16]	2		4[20]	21[22]	
Discharging to city plants		1[1]			5[2]		0[2]	6[2]	4[2]				0[8]		2[10]					2,945						0[16]	0		35[20]		

[1] Aircraft
[2] Not specified
[3] Wood products
[4] Pulp & paper
[5] Animal rendering
[6] Also 15 soybean processing plants
[7] No plants listed discharge to city sewers
[8] Cane sugar
[9] Excludes industries served by Duluth, Minneapolis and St. Paul sewer systems
[10] Munitions & Ordnance
[11] Fertilizer
[12] Also 6 Fish meal plants
[13] Cement
[14] Also 6 meat rendering plants
[15] Totals: no breakdown given
[16] Includes electroplating and Non-ferrous
[17] Sand and Stone processing
[18] Glass Fiber
[19] Meat rendering
[20] Fish and Shellfish
[21] Estimate of mines discharging acid wastes
[22] Coal washing
[23] Excludes 377, industries producing wastes within Sanitary District of Chicago, 325 of which connect to SDC system

LIMA





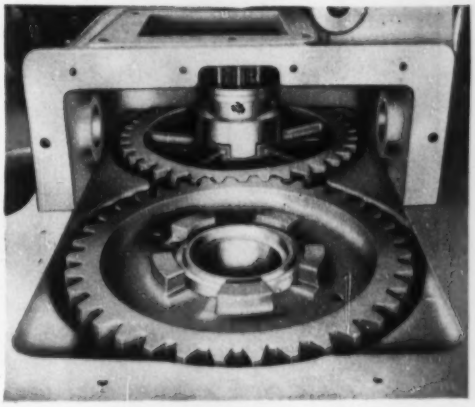
To meet the need for a 25 ton crane and 1 cubic yard shovel, Baldwin-Lima-Hamilton Corporation, is now producing the LIMA Type 44. As a shovel, it is equipped with 20 ft. boom and 15 ft. dipper handle. This latest addition, fills an important spot in the LIMA line, between the famous Paymaster (17½ ton crane—¾ yard shovel) and model 604 (35 ton crane—1½ yard shovel).

Like its smaller brother, (Paymaster, Type 34), the LIMA Type 44 is available, with either crawler or rubber mountings. Wider, longer crawlers for greater stability and double sets of front cone rollers, to distribute the load more equally over a wider area, are some of the major design features.

For your copy of our Type 44 bulletin, please contact your nearby LIMA distributor, or write to Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

Type 44 ANSWERS DEMAND for one yard shovel and 25 ton crane

LIMA incorporates many quality features in versatile shovel—crane—dragline—pull-shovel and truck crane.



Propel and swing gears are enclosed in an oil bath, assuring smooth, quiet operation.

COMPARE! No other machine gives you as much as LIMA!

1. Big capacity drums and sheaves lengthen cable life, by reducing the need for double wrapping and sharp bends in cable.

2. All gears, smaller parts and shafts which are subject to extra wear, are flame or induction hardened for longer life.

3. Main machinery is placed well back of center of rotation, to eliminate excess counterweight.

4. Propel and swing gears and power take-off, are enclosed in sealed oil bath for dirt elimination and smoother, quieter operation.

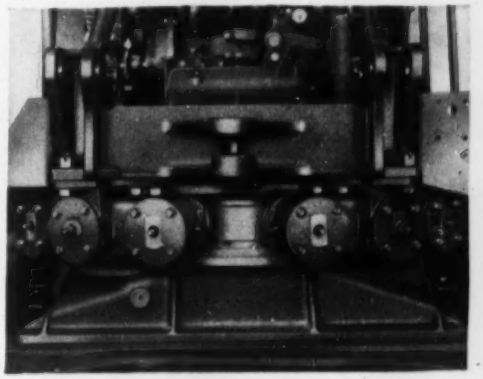
5. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.

6. Bronze bushings in tread, idler and drive rollers, are protected by piston-type dirt seal rings and retainers.

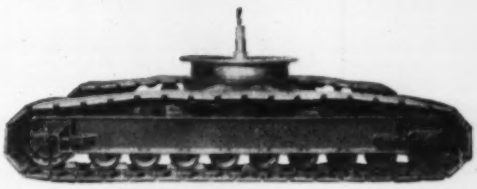
7. Torque converter (optional), automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster.

Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts, to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels, (¾ cu. yd. to 6 cu. yds.), cranes, (to 110 tons) and draglines (variable).



The conical rollers are the hook type, four in front and two in the rear The four front rollers are arranged in pairs and each pair is mounted in an equalizer frame.



An extra long Crawler (15'-0" long, 10'-8" wide), is available for work requiring greater stability.

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DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

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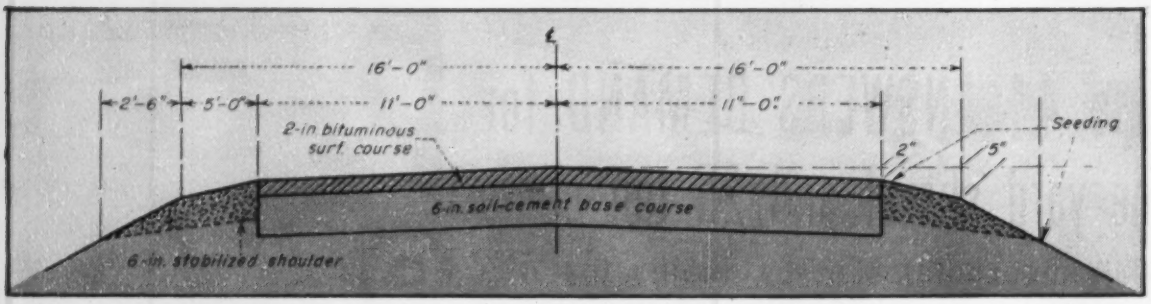


THE ROADWAY PAVEMENT is a combination of soil-cement base topped with a bituminous surfacing. Shoulders are stabilized.

Soil-cement base solves Wisconsin road problem . . .

Portland Cement Association and ENR staff photos.

NEW 21.5-MILE SECTION of Wisconsin's state trunk Highway 54 cuts through forest country east of Black River Falls in long tangents and on easy gradients.

. . . in rebuilding State Highway 54

Old roads do wear out completely at times and must be rebuilt on an entirely new location. This was the situation that faced the Wisconsin State Highway Department on a section of its east-west state trunk Highway 54, between Black River Falls and a connection with north-south U. S. Highway 51.

A 26-mile stretch of this important route had reached a critical stage of deterioration under the combined attacks of weather, time and traffic. During the spring thaws it had to be closed to traffic at ever decreasing intervals and for longer durations.

Sound engineering dictated that the 26 miles of old highway be replaced with a stretch of new road, and it also resulted in a 4.5-mile shorter route.

In view of the large mileage involved, economy of construction was important. Moreover, the road is located on a marshy plain containing extremely friable sandy soils. In some areas the line also cuts through virgin forest and cranberry bogs.

• **New location**—The solution was to build a 22-ft roadway pavement on an entirely new location, with a 6-in. soil-cement base and a 2-in. bituminous surface. Shoulders are 5 ft wide, stabilized with top soil and seeded. The seeding also extends 2½ ft down the embankment slopes.

Various factors were weighed in selecting soil-cement for the base of the new road. The predominance in that area of sand, which is unsatisfactory as a base for the usual "black-top" construction, results in excessive maintenance costs after every spring break-up.

Gravel and crushed stone must be hauled a considerable distance. Consequently, the use of portland cement with local sand for the base course offered an estimated saving of $50,000.

Wisconsin's experience with soil-cement construction was limited, but satisfactory. A 3-mile strip built in Adams County near Friendship has been in service for 17 years, with very little maintenance expense. And about 20 miles of soil-cement roads and streets in other areas of the state are giving good service.

• **Contractor interest**—Contractor interest in the soil-cement work was high. A total of 35 contractors took out plans and specifications and 15 submitted bids at the letting last spring. The low bid for the 289,000-sq yd project was $282,400. This bid—equivalent to $0.96 per sq yd—included cement, water, and processing the soil-cement base, using a sandy material already placed on the road.

This material was a 7-in. layer of sand placed atop of the compacted subgrade. It was included in the $935,000-contract awarded in 1952 for clearing, grading, drainage and structures on the 21.5-mile project.

• **Soil-cement base**—Loose sand and lack of haul roads along the 21.5-mile project presented continual transportation difficulties, but by combining ingenuity and efficiency the soil-cement paving contractor averaged 3,000 lin ft of 22-ft wide, 6-in. thick subbase, or nearly 7,500 sq yd, a day.

Cement and water were hauled in tanks on steel frames mounted on crawler tracks, drawn by track-type tractors. To obtain better traction in the cohesionless sand, a circular steel plate slightly smaller in diameter than the wheel was attached to the hub of each wheel of the cement distri-

butor. Cleats were welded to this plate, extending about 2 in. past the tread of the tires. These cleats enabled the wheels to turn without slipping, thus speeding up cement spreading.

The big tractor-drawn mixing machine, which ordinarily mixes a windrow of soil-cement, was modified to pick up and deposit a flat layer of material one-half the roadway width. This was possible because it was unnecessary to pulverize the sandy roadway material.

• **Paving sequence**—Bulk cement was transferred from railroad cars to 5-ton dump trucks by a cement unloader. Directly below the unloading bin was a platform scale that weighed each truck load before it left for the mixer. At a transfer point near the processing site, the cement was transferred to 12-ton bulk cement tankers.

A cement spreader was attached to the cement tanker as it arrived at the paving site. The tankers were equipped with conveyor screws to move the material into the spreader hopper. As both moved forward, the cement was deposited in 4½-ft windrows at the rate of 57 lb. per linear foot, to meet the 10 to 11% of cement required on the job.

The mixing train consisted of two track-type tractors, a water tank mounted on crawler treads, and the mixing machine. One tractor pulled the water tank while the other pulled the mixer and supplied power.

The mixing machine, containing a 54-in. pugmill, churned the soil, cement and water together to form the soil-cement mixture. Wings in front of the mixer gathered the materials into the pugmill where cement was incorporated first, then water, and the whole thoroughly mixed before being deposited in the rear of the machine where blades spread the mixed soil-cement to an 11-ft width and an 8½-in. loose depth.

To abide by specification limitations, the mixer completed 1,000-ft alternating half-road-width sections. At the beginning of the day, the mixer covered a 500-ft strip, then returned to the adjacent lane and mixed a section 1,000 ft long. It would then mix the alternate side of the road, until at the end of the day the final 500-ft section completed both sides to the same point.

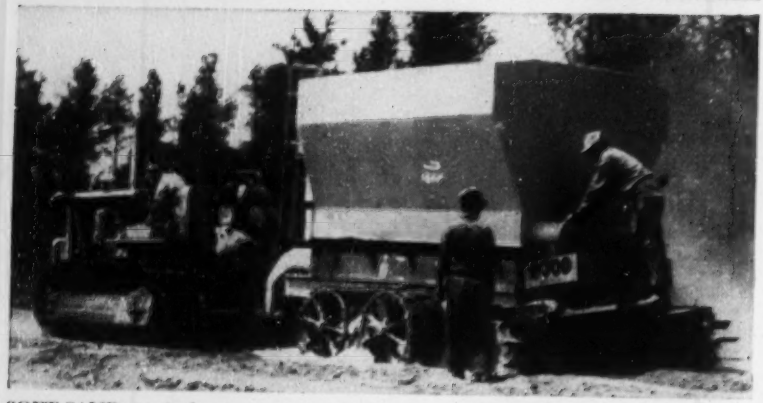
• **Special compaction methods**—Frequently soil-cement mixtures are compacted by a sheepsfoot roller, but because of the sandy soil, a track-type tractor was routed back and forth immediately behind the mixer to produce initial compaction. This was followed by a small pneumatic-tired tractor with hydraulically-controlled weeder attachment. The pencil-like tines of the weeder removed compaction planes left by the tractor.

OLD AND NEW ROADS. Because the old highway had deteriorated beyond economic repair it was replaced by a modern two-lane highway on a new location.

The surface was shaped to crown and grade by a road grader. Small ridges and tire marks left by the grader were smoothed out by a steel broom drag used in conjunction with a 13-wheel rubber-tired roller which completed compaction. Low air-pressure was used in the tires to avoid making ruts.

During finishing operations the soil-cement mulch lost some of its moisture content by evaporation due to heat and wind. This loss was replenished by water-tank trucks with spray bars attached, which were routed over the section wherever they were needed.

Specifications called for minimum densities of 95% of ASTM theoretical, and these were obtained by the rolling method used. The 8½-in. depth behind the mixer compacted to a 6-in. depth, averaging about 125 lb per cu ft, oven dry. Moistures to obtain this compacted density varied somewhat, but averaged between 8 and 10% by weight of material. Field



SOFT-SAND required water tanks (top) and cement tankers (bottom) to be mounted on crawler treads, while cleats were welded to the wheels of the cement spreader to improve its operation.

SOIL-CEMENT operations were keyed to the mixing train—made up of one tractor pulling the water tank and a second tractor pulling the mixing machine.

CONTRACTS AND CONTRACTORS—21.5 MILE PROJECT

Contract	Contractor	Started	Finished	Cost
Grading, drainage and structures	S. J. Groves and Sons Co., Minneapolis	Sept. 19, 1952	Aug. 15, 1953	$934,600
Soil-cement sub-base	John Dieseth Co. Fergus Falls, Minn.	June 11, 1953	Sept. 1, 1953	$282,400
Produce bituminous aggregates	James Peterson & Sons, Medford, Wis.	July 22, 1953	Sept. 9, 1953	31,500
Bituminous surfacing, and shoulder stabilization	John F. Bloomer Co., Appleton, Wis.	Aug. 5, 1953	Oct. 1, 1953	169,000
			Total contract cost	$1,417,500

density and moisture control tests were run daily.

It is necessary to retain the moisture content in the soil-cement mixture to permit the cement to hydrate. This was done by applying a coating of bitumen. This asphaltic emulsion, RS-2, also served as a tack coat for the 2-in. bituminous wearing course which was placed under a separate contract. The road was sanded to prevent pick-up of asphalt by vehicles occasionally routed over it.

• **Bituminous surfacing**—In addition to the grading and soil-cement contracts, the state highway department awarded a contract (see table) for furnishing 25,200 cu yd of aggregates for the bituminous surfacing. A fourth contract covered construction of the 2-in. bituminous surfacing, shoulder stabilization and seeding on the 21.5-mile project.

Aggregates for the bituminous surface were delivered and stockpiled at the hot-mix bituminous plant near the west end of the project. Gradation requirements called for 95-100% passing a ¾-in. sieve; 65-95% passing a ⅜-in. sieve; 35-65% passing a No. 10; 10-35% passing a No. 40; and 1-7% passing a No. 200 sieve.

The single-aggregate bituminous surface course was laid to a depth of 2-in. over the 22-ft width of soil-cement stabilized base course. The hot-mix plant had a rated capacity of 140 tons per hr. The bitumen was an asphalt cement, Type AC, with a 120-150 penetration.

• **Stabilized shoulders**—The final major construction item was stabilizing the 5-ft shoulders, which consisted of a compacted mixture of sand in the subgrade and binder soil. This silt-loam material was spread at the rate of 1 cu yd per 20 lin ft of shoulder.

It was rolled lightly with one pass of a wobble-wheel roller, then thoroughly mixed with the sand by a tractor-drawn pulverizer. This machine was set to pulverize and mix to a maximum depth of 6-in. next to the pavement.

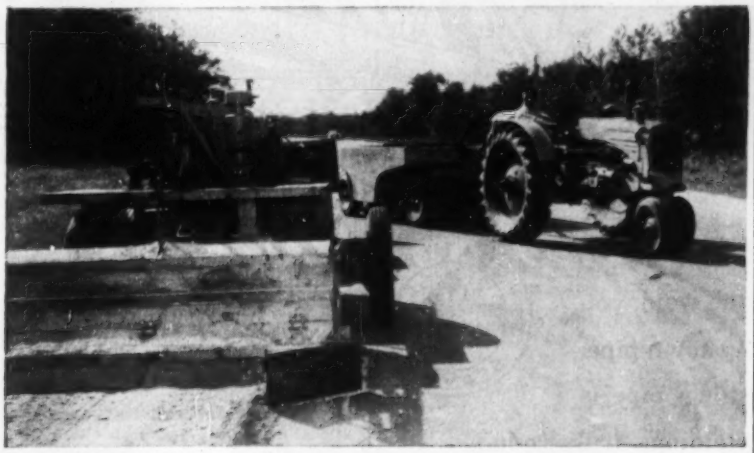
Next operation was two passes of the wobble-wheel roller, then shaping with a motor grader, and final rolling with the wobble-wheel until the required compaction was obtained. Moisture was added to the subgrade and to the mixture of silt, loam and sand as necessary.

• **Engineers in charge**—The project was constructed under the supervision of T. M. Reynolds, district engineer, reporting to E. L. Roettiger, state highway engineer, Wisconsin State Highway Department. A. T. Bleck is construction engineer, assisted by

S. E. Hicks. Wm. A. Roarig was reident engineer on the soil-cement work and Dave Strand was soils engineer. W. J. Herried was resident engineer on the bituminous surfacing. A. J. Engelke was engineer of materials and tests, from the district office, reporting to Guy Larson, engineer of materials and tests for the State Highway Department.

Four basic steps of shoulder stabilization:

SELECT BORROW is spread along shoulder with a modified stone-spreader, and . . .



THOROUGHLY MIXED with the sandy soil to a depth of 6-in., then . . .

WOBBLE-WHEEL ROLLER provides proper compaction, and . . .

PATROL GRADER shapes shoulder to finished lines, ready for seeding.

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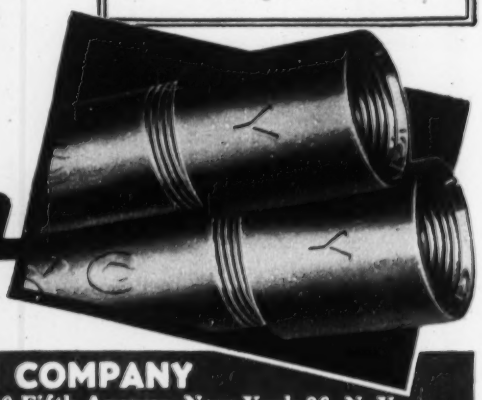

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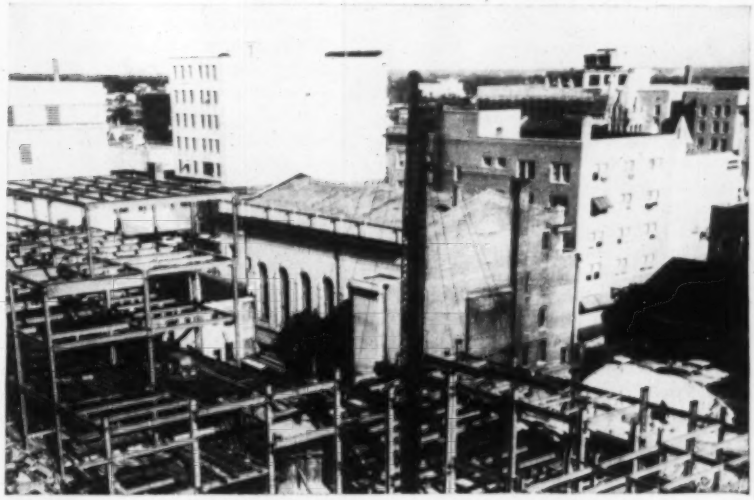


A 17-STORY office building is rising on the site of a former parking lot.

Seven insurance firms build in city as resulting tie-up breeds concern

A strategic location coupled with tax concessions voted by the state legislature are the twin magnets that have helped to pull more than $18-million worth of construction work into Jacksonville, Fla., during the last 18 months.

Biggest deal was the acquisition of the South Central Home Office of the Prudential Life Insurance Co. to serve a 10-state area encompassing an estimated 20% of the entire United States (ENR July 16, p. 66).

The building, going up beside the St. Johns River a few blocks from the city's main business district, will send its 22 stories 300 ft into the air to become Florida's tallest office structure. Construction, which began last August, is scheduled for completion in March, 1955.

Next in importance, and playing its role in launching Jacksonville as the insurance capital of the South, is a 17-story, 229-ft structure to house the Independent Life and Accident Insurance Co. Work began last March with the completion date set for September, 1954.

Third in importance of seven insurance projects is the erection of a new building to house the Peninsular Life Insurance Company. Located on a plot a half-mile from the main business district, the seven-story 96-ft structure already is completed at an announced cost of $1.5 million.

All three of these projects were designed by a Jacksonville architectural firm, Kemp, Bunch and Jackson. The same firm also handled a one-story and partial basement construction job to provide a regional headquarters building for the Interstate Life and Accident Insurance Co. The building, started in October, 1952, was completed last March at an announced cost of $52,000.

• **The bait**—Perhaps the greatest incentive for the establishment of these companies in Jacksonville was the passage by the Florida legislature of a bill allowing out-of-state insurance companies refunds of up to 80% of their state tax payments on premiums if they locate regional headquarters in Florida to serve three or more states.

In addition to tax concessions and strategic location, however, another attraction, according to a spokesman for one of the companies, is rapid expansion of the South as a region for their operations, not only in the sale of life insurance, but in the number and size of investments to be made in farms, homes and businesses.

• **The catch**—Besides the companies already mentioned, three other insurance firms are either locating or expanding their facilities in the city. The State Farm Insurance and the United Life Insurance companies are erecting buildings, and Gulf Life Insurance Co. is adding 7 stories to its headquarters.

The five buildings currently under construction feature special design accent upon the purpose for which the buildings will be used. Some of the allowances for special conditions are these:

• Prudential, located close to the river bank and anticipating difficulty arising from the high water table, decided to forego the customary basements and sub-basements used to house operating equipment, and moved such machinery to the three top floors. Steam boilers will be placed at ground level, and a small basement area will house the mailroom and utility section.

To minimize hurricane hazards, 2,300 concrete piles were driven in 212 clusters down through shifting sands to coral bedrock 25 ft below.

Six of the 19 acres purchased by the company will be used for parking facilities, the balance for access roads, walkways, riverfront promenades, recreation areas, parks and the structure itself, which will occupy one and one-half acres.

Additional installations on the site include a 1,500-ft storm drain, a sanitary sewerage network, street paving and curbing, sidewalks and other items on the unimproved tract at an estimated cost of $113,000. Part of the tract may be occupied by a hospital.

• Independent, after deciding to use its basement for a printshop, planned to take over the two top floors for air-conditioning and other mechanical operating equipment.

• Peninsular features a "weather-making" system that is so flexible that it will dispense cooling air to offset sun-heat on expansive window areas on one side of the building while emitting hot air to warm the shady side of the structure as necessary.

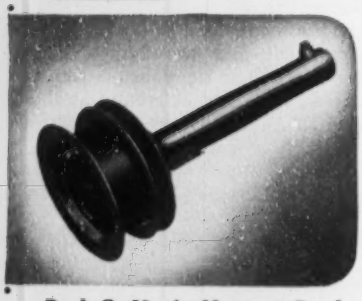
Cellular steel floor decking (also chosen for Independent and Prudential), will facilitate convenient placing of electric and phone outlets. Instant-starting fluorescent lighting fixtures will light interior wall paneling much of which will be of specially selected woods, including such varieties as African cherry, mahogany, teak, rift oak and Elizabethan oak augmented by any of 15 basic color schemes.

A 300-seat auditorium will serve employee meetings and will be offered to civic groups desiring a place to assemble.

Accent on glass is notable with a total of 278 pivoting "picture windows" glazed with solar-heat-intercepting glass to be installed. Plans call for 9,000 sq ft of this type of glass and

(*Continued on page 44*)

2 ways to make crane operations pay more



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2,000 sq ft of polished plate glass.

The river side of this plot has been turned into a park with play areas. Other features include a lounge and library, a "sick-bay" or small hospital, a cafeteria with a seating capacity of 150, and the printing plant.

Heavily traveled areas are tiled for easy cleaning, but all private working spaces will be covered with seamless wall-to-wall carpeting.

• **The final count**—While the city generally was counting the benefits of new-found opportunities afforded by the insurance company invasion, one voice demanded that the situation be given a second look.

William S. Johnson of the city's chamber of commerce warned that economic strangulation of the business district is imminent unless multi-story parking facilities are built in the very near future.

He stressed the urgency of getting off the ground with parking structures, stating that, one by one, parking lots are being purchased out of circulation.

Besides the insurance companies, only two of which are providing parking space to replace those lost in the various deals, a new three-story, $2-million basement "shopping center" will decrease available parking areas even further.

Two additional factors were cited as putting the pressure on the city's parking problem:

• More locally-owned automobiles—during a 10-year period which ended in October of last year, auto registrations more than doubled from 54,000 to 125,000.

(*Continued on page 46*)

"Built in" curbs speed paving job

Monolithic pouring of pavement and curb is resulting in an appreciable saving in time and construction costs at Lincoln Village (ENR, Aug. 13, p. 49), near Columbus, Ohio, according to spokesmen for the development.

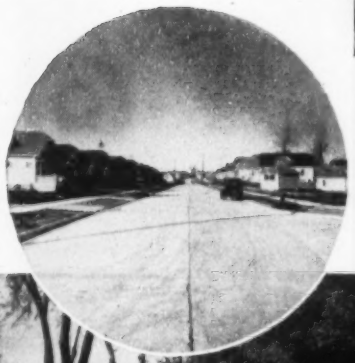
With nine miles of concrete pavement going into the first section of the village, the method, it is believed, will receive its greatest application to date.

• **Here's the method**—Instead of the conventional placing of concrete curbs in advance of the paving, with the curb forms installed in a double row for the length of the job, under the built-in-curb system, the outside form for the curb acts as the main form for the entire pour.

Separators in the shape of the curb section are placed at short intervals, and act as screeds for the "rolling" of the curb in conjunction with the laying of the pavement panel.

The procedure, known in the region as the "Detroit Method", is receiving enthusiastic acclaim from the men working with it, and Carl R. Frye, of the development company, said, "With the advantages of this innovation we will provide safe streets with low maintenance costs and long life. The excellent acceptance which the 'Detroit Method' has received makes us enthusiastic about bringing it to central Ohio on a large scale."

19th Street from St. Paul Ave., in Milwaukee. Built in 1914. Photos taken 1927 and 1953.



53rd St., north from Beloit Rd., West Milwaukee. Built in 1927. Photos 1927 and 1953.

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These old concrete streets in the Milwaukee area typify the durability, dependability and ***low-annual-cost*** service rendered by concrete pavement all over America. In many instances the performance of these old concrete streets is even more remarkable because they were built before the use of longitudinal joints and hence were susceptible to more cracking than if they had modern jointing. Today improvements in engineering design, materials and construction methods insure even better concrete pavements.

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Pulaski Avenue, Cudahy, was built in 1925. The photos were taken in 1927 and 1953.

Silver Spring Road, Whitefish Bay. Built in 1915 and widened in 1924. Photos were taken in 1927 and 1953.

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MUNICIPAL

• Jacksonville is a hub city through which the bulk of automotice traffic bound for South, Central and West Florida must flow. Three of the South's most traveled highways converge on the city's main street.

A partial solution of the latter problem is taking shape in the form of a $69-million Jacksonville Expressway involving two bridges across the St. John's River, that will speed through-traffic and ease the clogging of the city's arteries.

One of the bridges is in service and the other is scheduled for completion next year, but there is worry generated by the continued growth of the city, which in the first ten months of 1953 granted $42.6 million in city-country building permits.

Heretofore proponents of multi-story parking facilities have been discouraged by construction costs. City officials have wanted private promoters to initiate such projects but the latter, have asked for municipal participation to help share the risk factors.

Municipal briefs . . .

• **Doubles water facilities**—The Washington, D. C., Suburban Sanitary Commission recently voted to spend $1.9 million for the construction of two new 16-mgd water treatment units and two reservoirs, each capable of storing 2.8 million gallons. The schedule is set up for a mid-1955 start.

• **New airport authority**—An ordinance providing for the creation of an authority to finance improvements at Philadelphia's International Airport has been approved by the city council. The authority will issue revenue bonds for construction of self-liquidating projects.

• **New code**—A 1953 building code for North Carolina has become effective, replacing a 1935 issue. It has been stated by the state insurance commissioner that a reasonable length of time will be allowed for designers to come into line in instances where the new code reflects changes in construction techniques and use of materials.

• **Uncle Sam lends a hand**—The Bureau of Reclamation is contracting to supply the city of Russell, Kan., with water from its Cedar Bluff Reservoir, a Missouri River Basin project, to supplement existing municipal water sources. The city advanced $3,000 for 300 acre-ft and will pay $10 an acre-ft for additional water to meet emergency requirements of the city arising from drought.

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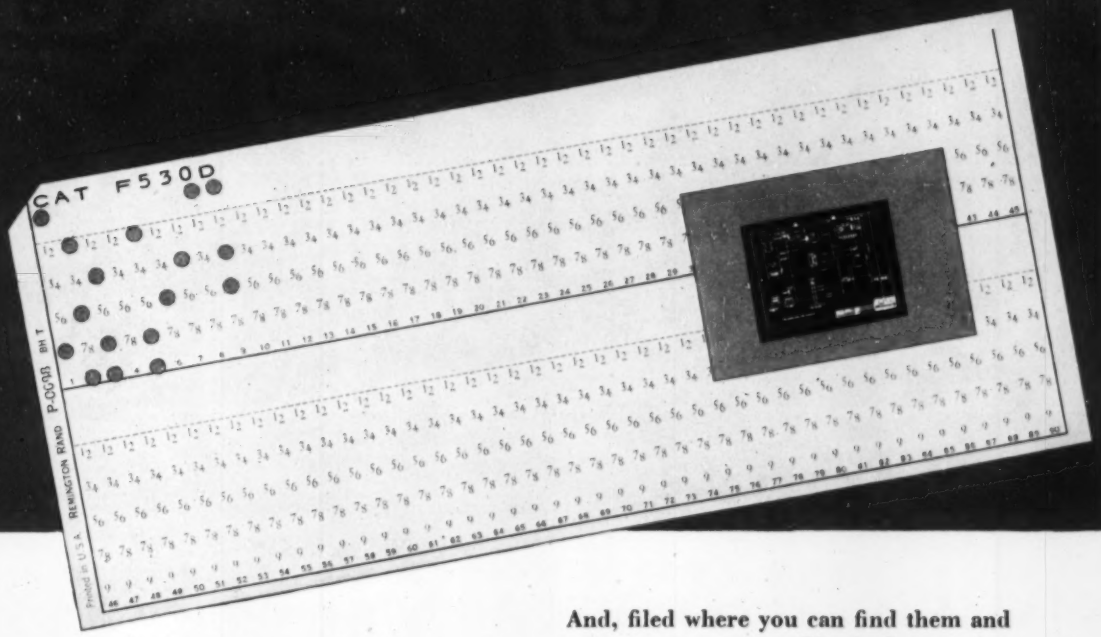

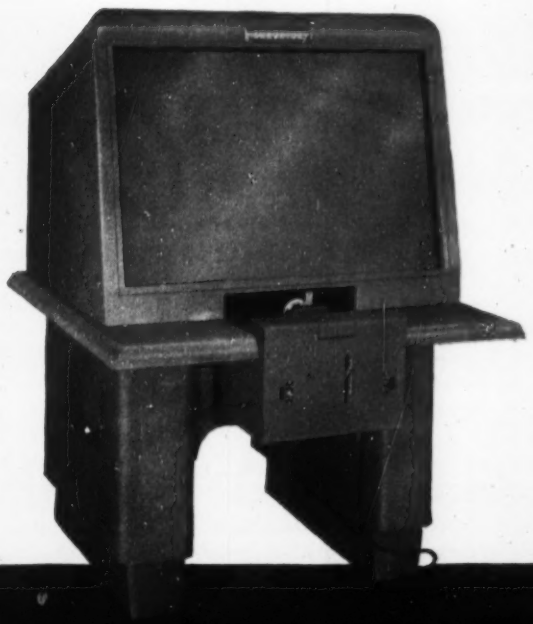

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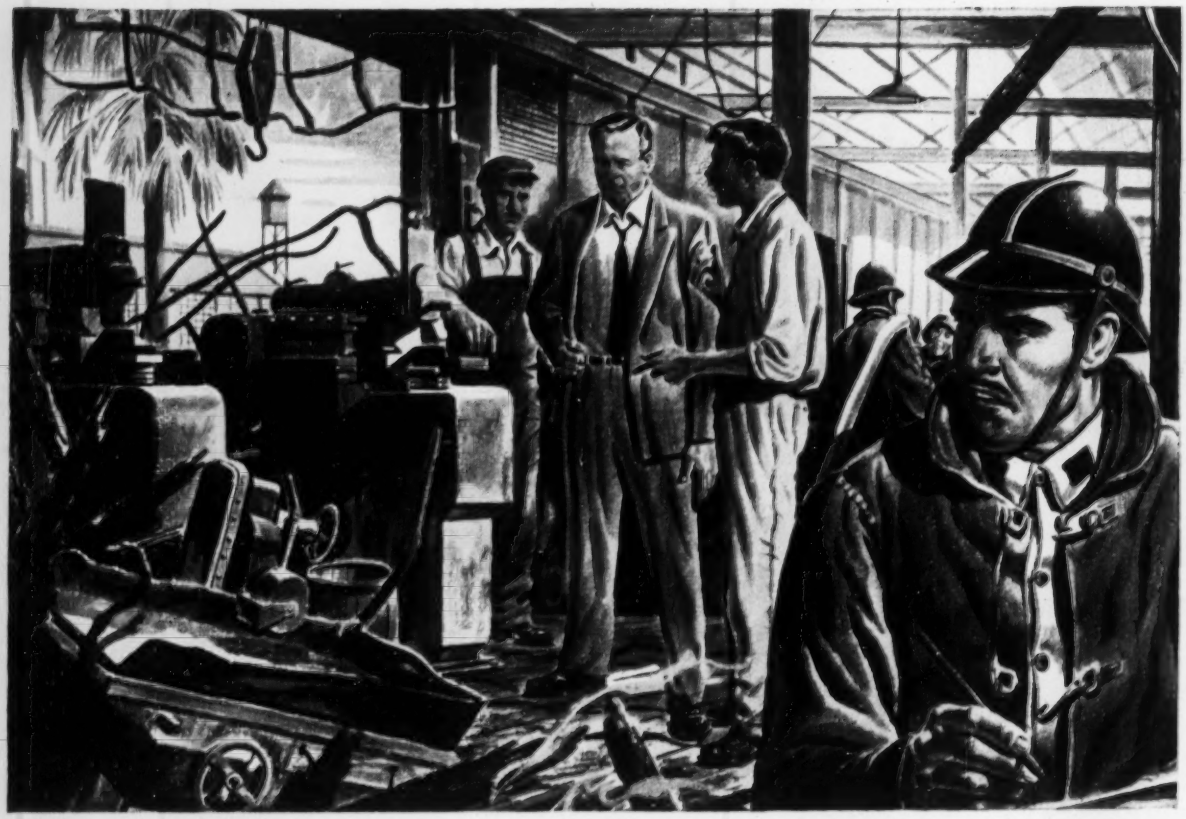

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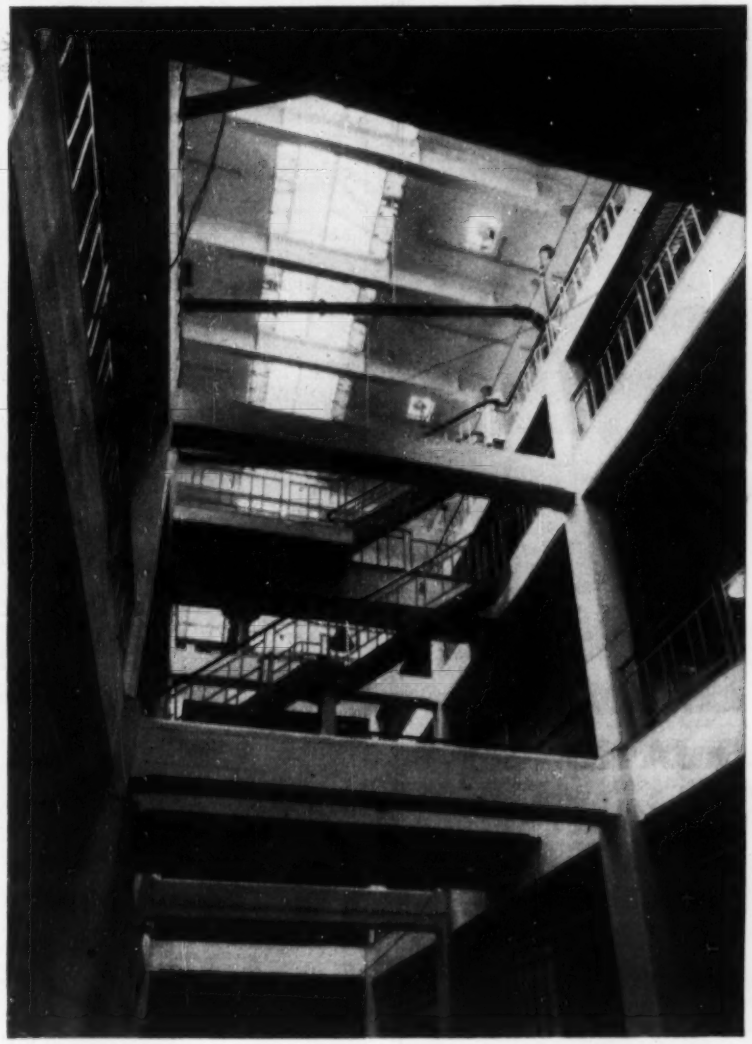

NEW STILL HOUSE of a 200-year-old distillery in London, England, is framed in reinforced concrete with precast, prestressed concrete roof I-beams.

Prestressed I-beams support roof of reinforced concrete building

Nine post-tensioned concrete I-beams, spanning 54 ft with 5-in. thick webs, support the 100-ft long roof of a new distillery still house in London, England. Depth of the roof beams increases from 29 in. at the ends to 39 in. at mid span. Reinforced concrete columns and beams form the rest of the building's structural frame.

Precast in five sections, the I-beams supporting the roof were assembled on the second floor of the building and then were raised to their position at the roof. Four stiffening webs—perpendicular to the beam web at one end of each precast section—are provided along the length of the prestressed roof beams. Prestressing cable ducts were formed when the beam sections were cast and the cables—five 12-wire strands—were threaded through the ducts after the joints between beam sections had been dry packed.

Precast concrete roof deck members span between the prestressed beams and are covered with a concrete screed and asphalt roofing.

(Continued on page 50)

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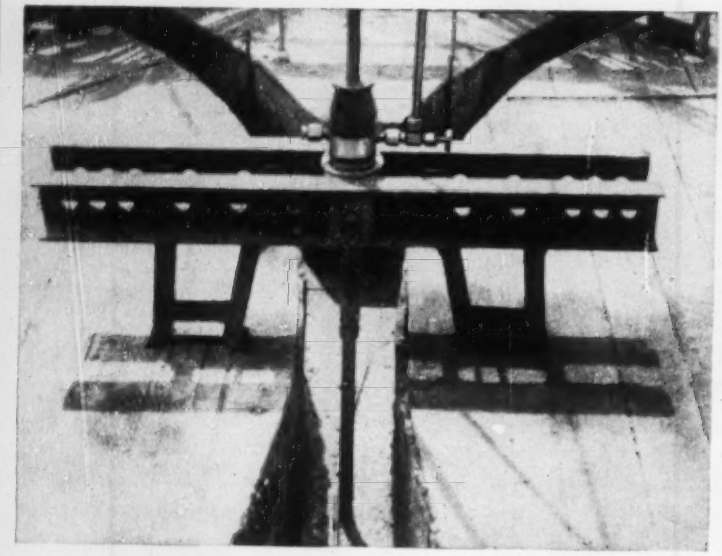

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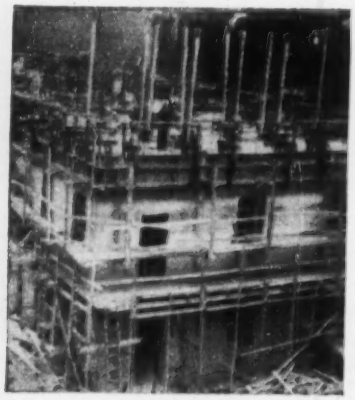

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INTERNATIONAL

The same roofing system is used over a new boiler plant at the distillery. There the prestressed roof beams, however, were precast all in one piece and span only 40 ft with 5-in. web thickness and a 28-in. depth at midspan which decreases to 21 in. deep at the ends.

Contractor for the buildings was Holland & Hannen and Cubitts, Ltd., and structural engineers were Strover and Adcock, both firms of London, England.

International briefs . . .

• **Italian road company**—To plan and build highways in Italy and abroad, an Italian government corporation, operating natural gas and oil beds, has teamed up with the Agip, Fiat and Pirelli companies to form a new firm called Sisi. The first project is a 515-mi, three-lane speedway running from Milan to Naples, through Florence and Rome.

• **India-Pakistan aid**—In India, U. S. aid will be used to build up railways during the next six months. The program calls for $20 million in U. S. funds and about $6 million put up by India. Meanwhile, in Pakistan, the new U. S.-Pakistan pact provides about $22 million in U. S. technical assistance (no military aid is included). The new agreement expands the development program that has furnished Pakistan with $44 million in the last three years.

• **New naval base**—Venezuela plans to construct a new naval base on the north coast, about 70 miles west of LaGuaira. The estimated cost of the project is $40 million.

• **Financing Aswan Dam**—A West German banking mission has arrived in Cairo to discuss with the Egyptian government the financing of the new $4-billion dam to be built on the Nile south of the famous Aswan Dam. West Germany has offered $230-million in equipment and technical services and work is expected to start in August.

• **Iraq dam design**—Harza Engineering Co., of Chicago, has been hired by Iraq to study and prepare designs for the Derbendi Kahn Dam on the Dialah River. This 400-ft dam is part of a major irrigation scheme for the Tigris-Euphrates Valley (ENR Oct. 8, 1953 p. 230). At present, Harza Co. is engaged in the design of the 550-ft Bekhme Dam on the Greater Zab River—also in Iraq.

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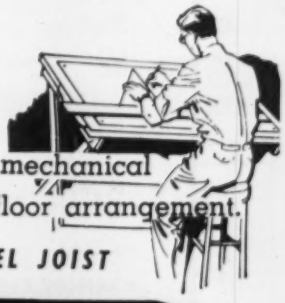

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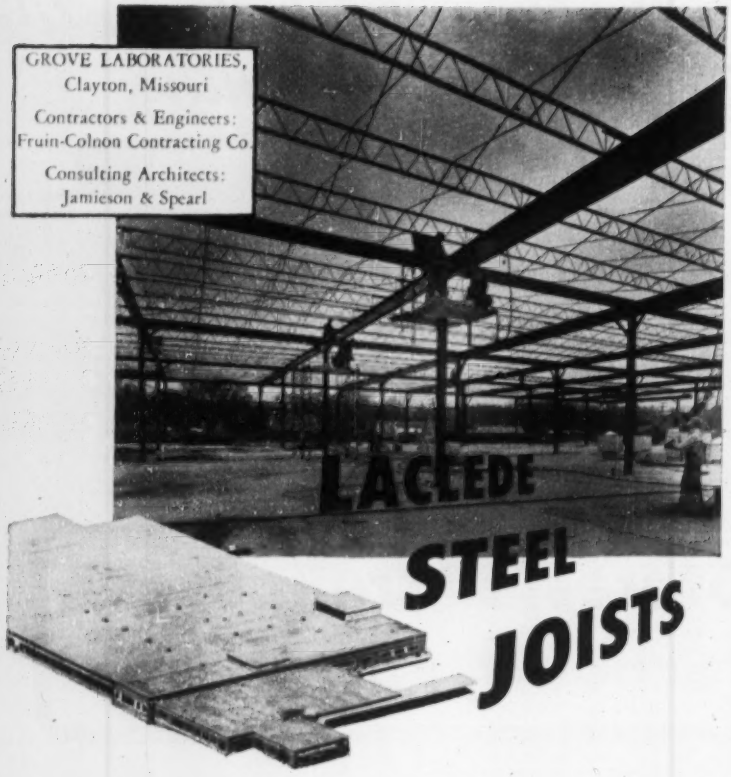

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OBITUARIES

Albert M. Traugott, 71, chief engineer for the Virginian Railway for 20 years until his retirement in 1947, died at Norfolk, Va., Jan. 1. He studied at Mechanics Institute, Rochester, N. Y., and at Purdue University. He began his railroad career with the Buffalo, Rochester & Pittsburgh Railway and later was with the D.L.&W.R.R.

Charles L. Bailey, 71, veteran Montana Bureau of Reclamation Engineer who in 1950 was cited with a bureau award for meritorious service, died Dec. 21, in San Bernardino, Calif. He served as superintendent of the bureau's Sun River Montana Project from 1943 until his retirement in 1949. He joined the bureau as an engineer for the Lower Yellowstone project in May, 1906.

Leo Ehlinger, 67, district engineer for the Texas highway department at Brownwood for 20 years, died Dec. 30. A.C.E. graduate of Texas A&M in 1907 he had been a state employee since 1909 continuously except for periods of military service.

Fred G. Doolittle, 85, retired civil engineer of Seattle, died there Dec. 29. He had lived in Seattle for 70 years, worked as engineer for the company that helped bring the first water to the city and for the city 36 years.

Alphonse Paradis, 70, retired chief engineer of the Quebec Roads Department and designer of the province's first road map, died Dec. 28. A graduate of Ecole Polytechnique, Montreal, he joined the department in 1914 and became chief engineer in 1932. He retired 13 years ago.

Roger T. Furr, 50, construction engineer of Pittsburgh, died Dec. 26 in Rochester, N. Y. He supervised the construction of numerous bridge jobs as well as public works projects abroad. He was a graduate of George Washington University.

Hugh Adam Stoddart, 53, U. S. Bureau of Public Roads engineer who was slated to become division engineer at the Portland, Ore., office on Dec. 31, died in Portland Dec. 20.

Nicholas H. Heck, 71, civil engineer and for more than 20 years chief of the division of terrestrial magnetism and seismology of the Coast and Geodetic Survey, and for 41 years connected with the survey, died in Washington, D. C., recently.

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New Chevrolet trucks for '54 are here to do your hauling or delivery job faster, more efficiently and more economically.

To begin with, they bring you thrifty new power in *all* models. You save time on every trip with extra reserves of high-compression horsepower under the hood—and you enjoy greatly increased operating economy as well.

In addition, these great new Chevrolet trucks offer new and even greater dependability with increased ruggedness throughout the chassis. You'll find heavier axle shafts in 2-ton models . . . bigger, more durable clutches in light- and heavy-duty models . . . more rigid frames in *all* models. Pickup and stake bodies are plenty rugged, too—and they're roomier for '54!

But that's only the beginning! You enjoy new cab comfort, convenience and safety. Instruments are easier to read . . . controls are easier to reach. A new one-piece curved windshield gives you greater visibility. The new Ride Control Seat* lets you drive in relaxed comfort hour after hour, over all kinds of roads. Seat cushion and back move as a unit to "float" you over bumps without back-rubbing.

In another great advance, new Chevrolet trucks offer you the last word in no-shift driving ease and convenience. With proved truck Hydra-Matic transmission* you can drive all day and make door-to-door deliveries without shifting or clutching. Fact is, there *is* no clutch!

These are some of the many big new benefits awaiting you in the new Chevrolet trucks for '54. Why not plan to get the whole money-saving story at your Chevrolet dealer's soon! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

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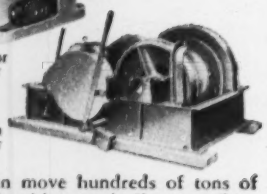

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FIELD AND OFFICE

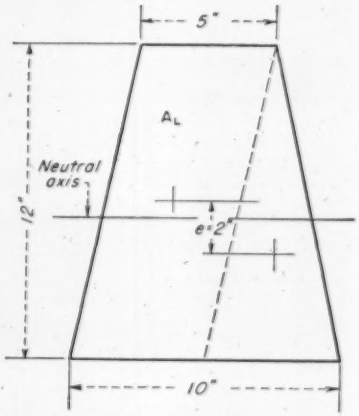
Moment of inertia computations simplified for irregular sections

When an irregular section can be divided into two elemental parts, computations for the moment of inertia of the section can be simplified by the following formula:

$$I = I_L + I_S + \frac{A_L + e^2}{c}$$

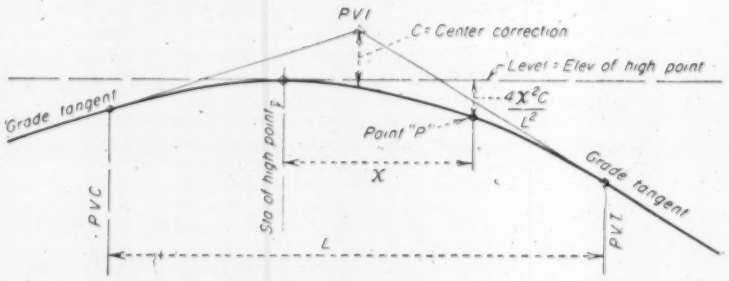
I_L and I_s are moments of inertia of the larger and the smaller elemental areas, each taken about its own neutral axis. A_L is the larger elemental area of the irregular section, e is the distance between centers of gravity of the elemental areas and is measured normal to the neutral axis of the section, and c is the ratio of the total area of the section to the smaller elemental area.

Since the moment of inertia of a section is minimum when taken about the neutral axis, the first derivative—of the expression for the moment of inertia of a section divided into two parts—was set equal to zero to derive the formula. The formula obviates computation for the position of the



TRAPEZOID moment of inertia may be computed without locating neutral axis. The distance e, between neutral axes of parallelogram and triangle, is used instead.

For computing vertical curve elevations . . . .



In this simplified method, first the station and elevation of the high point on the vertical curve parabola are determined. Then the elevation of any point P on the vertical curve is given by the formula:

$$\text{Elev. of } P = \text{Elev. of high point} - \frac{4x^2C}{L^2}$$

where L is the length of the vertical curve, and C (the center correction), and the station and elevation of the high point are found by using the conventional methods.

The advantage of the method is that offsets are applied to the constant elevation of the high point tangent to the vertical curve. In the conventional method, to compute a station elevation on the vertical curve, the elevation on the grade tangent must be computed at the station in addition to computing the offset from the grade tangent.

If a large number of vertical curve elevations are required, as in the case of a complicated bridge structure on a vertical curve, the advantage of the method presented here would be considerable. William E. Cooper, Dept. of Public Works, Albany, N. Y.

neutral axis of the section and transferring moments of inertia from one base line to another. However, the neutral axis of the section is at a distance e/c from the neutral axis of A_2.

• **For example,** the trapezoid in the diagram is divided into a parallelogram and a triangle so that $I = 720 + 240 + 80 = 1{,}040$. The neutral axis of the section is at 0.67 in. from the neutral axis of the larger elemental area.

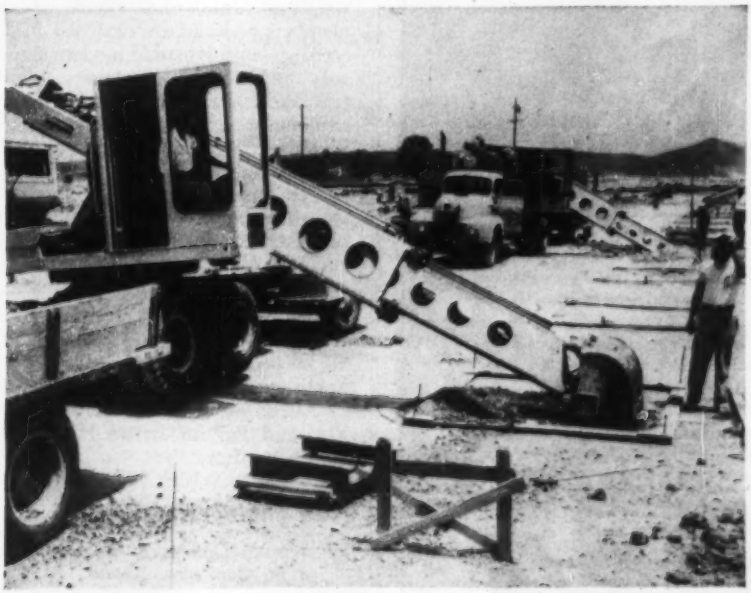
Many irregular sections can be divided into two elemental areas such as triangles, rectangles, parallelograms, circles, rings, and points. Although a beam section may appear to be composed of more than two elemental parts, it may be possible to reduce the number to two by combining identical parts. The flanges of a channel-shaped area, for example, may be combined into one rectangular area if they lie at right angles to the neutral axis. A flat bar on edge with a round rod attached to each side at the top may be solved as a rectangular area and a rod area doubled. W. D. BIGLER, STRUCTURAL ENGINEER, LONG BEACH, CALIF.

Machines greatly reduce costs of cutting column footings

With 5,300 column footings to be excavated at its Portsmouth, Ohio, gaseous diffusion plant the Atomic Energy Commission assigned five of these versatile diggers to contractors doing the work. R. R. Ross, grade foreman for Penker Const. Co., Cincinnati, figures the unit cost at about two-third less than that for hand labor. Speaking of a hole 11 ft x 11 ft x 8 ft deep, Ross says that the machine excavation cost was $50, compared with $150 for hand work.

• **Cutting inside** a staked-out board square on the surface, a machine digs to the proper depth, usually leaving about 3 in. around each side for hand trimming by an air-powered spade. In many cases teeth are removed from the bucket, to get a smooth-finished job. On larger holes, however, the teeth are not removed until the hole is nearly complete. No concrete forms are needed inside the smaller holes; in larger ones, it is necessary to ramp down on one side, for machine access. Here at least one side form is built for concreting.

A machine can dig ten or more holes a day, depending on the size. Size ranges from 4 ft 4 in. square to 11 ft square; depths are from 2 ft to 12 ft.



FAST FOOTINGS—Two of five precision excavating machines that enable contractors at Portsmouth, Ohio, Atomic plant to dig footings for a third of hand-labor cost.

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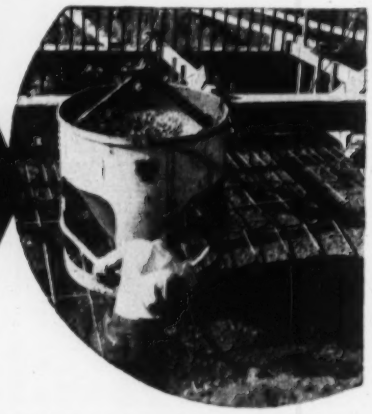

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BOOKS

A new statistics text

ENGINEERING STATISTICS AND QUALITY CONTROL—By Irving W. Burr. 442 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, $7.00

This book appears to be admirably well suited to its avowed purpose of serving as a textbook for college study by advanced students in engineering and physical science. It includes chapters on such basic statistical subjects as frequency distribution, the normal curve and probability. But it gives major emphasis to control charts such as would be used in industrial work.

As it is written for advanced students, it presumes some mathematical knowledge. But, except for some derivations—particularly as concerns the normal curve—the mathematics should be readily understandable by practicing engineers.

As a reference it seems to have value only to those familiar enough with statistics to readily follow the terms and symbols.

Miscellaneous notes

• **A report on the damage done** June 9 by a tornado in the vicinity of Worcester, Mass., and the structural lessons derived from a study of the damage may be obtained from the Factory Mutual Engineering Division, 184 High St., Boston 10, Mass. Among the conclusions reached by J. A. Wilson, the author, are: (1) Structural members of buildings designed in accordance with accepted modern standards are relatively tornado resistant; (2) The several types of modern construction have varying resistance; (3) Severe property damage, particularly to glass, lightweight siding, roofs and roof coverings, and water damage, may always be expected when a building is subjected to the full force of a tornado.

• **Highway papers** that received awards under the General Motors Better Highways Awards Contest have been published by General Motors, Detroit 2, Mich., in a pamphlet "How to Plan and Pay for Better Highways." Copies are free.

New engineering books

PRESTRESSED CONCRETE—By Y. Guyon. 543 pp. Contractors Record, Ltd., London, and John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y. $12.00

SIMPLIFIED PROBLEMS IN STRENGTH OF MATERIALS AND STRUCTURAL DESIGN—By Ephraim Viertels. 636 pp. Edward W. Sweetman, 1 Broadway, New York 4, N. Y. $10.00

COMPLEX VARIABLE THEORY & TRANSFORM CALCULUS—By N. W. McLachlan. 388 pp. Cambridge University Press, Cambridge, England, and 32 East 57th St., New York 22, N. Y. $10.00

Reports and pamphlets

THE HIGHWAY RESEARCH BOARD (2101 Constitution Ave., Washington 25, D. C.) has issued recently the following publications: Bulletin 68, Effect of Tinted Windshields and Vehicle Headlighting on Night Visibility (90c); Bulletin 69, Soil Stabilization (90c); Bulletin 70, Air-Entrained Concrete—Properties of Air Voids and Service Record of Pavements (45c); Bulletin 71, Soil Temperature and Ground Freezing ($1.80); Bulletin 72, Directional Channelization and Determination of Pavement Width (75c); Bulletin 73, Driver Characteristics and Accidents (90c).

FACING UP TO CLEVELAND'S TRAFFIC PROBLEMS—An Appraisal of Street and Traffic Functions, with Recommendations for Positive Steps to Improve Administration. Automotive Safety Foundation, Washington 6, D. C. Copies available from the Mayor, Cleveland, Ohio.

HIGHWAY MAINTENANCE WITH CALCIUM CHLORIDE—Solvay Process Division, Allied Chemical and Dye Corp., 61 Broadway, New York 6, N. Y.

PROCEEDINGS OF THE SIXTH CANADIAN SOIL MECHANICS CONFERENCE—Technical Memorandum No. 27, National Research Council of Canada, Ottawa, Ont.

THE BEACH EROSION BOARD (5201 Little Falls Road, N. W., Washington 16, D. C.) has issued the following Technical Memoranda: TM No. 30, Annotated Bibliography on Tsunamis; TM No. 31, Laboratory Study of Wave Energy Losses by Bottom Friction and Percolation; TM No. 32, Accuracy of Hydrographic Surveying In and Near the Surf Zone; TM No. 33, Laboratory Investigation of the Vertical Rise of Solitary Waves on Impermeable Slopes; TM No. 36, Wave and Lake Level Statistics for Lake Michigan; TM No. 37, Wave and Lake Level Statistics for Lake Erie; TM No. 38, Wave and Lake Level Statistics for Lake Ontario. Limited free distribution.

AIR POLLUTION ABATEMENT MANUAL—Gas and Vapor Abatement—Manufacturing Chemists' Association, 246 Woodward Bldg., 15th & H Sts., N. W., Washington 5, D. C. 60¢.

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NEW COLOR FILM NOW AVAILABLE

"STEEL SPANS the CHESAPEAKE"

"Steel Spans the Chesapeake," a new 16-mm color film describing the building of the 4-mile-long Chesapeake Bay Bridge, is now available for showings.

This 36-minute film, with factual narration, traces the progress of construction from the sinking of piers to final paving of the roadway. It covers the erection of a wide variety of spans used in the Chesapeake Bay Bridge, including simple beam and girder spans, simple deck-truss, and deck-cantilever-truss spans, a through-truss cantilever span and a 2922-ft suspension bridge.

Among the interesting and unusual erection techniques described in the film is the use of an assembly dock, one mile from shore, where bridge units were assembled, then floated by barge to their final locations. This was the most extensive use of the spectacular flotation method of erection in construction history.

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There is no charge for the use of this film. We suggest that requests for the film be made *at least* three weeks in advance of the date of showing in order to allow ample time for scheduling and shipment.

Please address your request to: Publications Department, Bethlehem Steel Company, Bethlehem, Pa.

For showings West of the Rockies: Publications Department, Bethlehem Pacific Coast Steel Corporation, 20th & Illinois Sts., San Francisco 19.

For showings in Canada: Bethlehem Steel Export Corporation, 804 Dominion Square Bldg., Montreal, Que., Canada.

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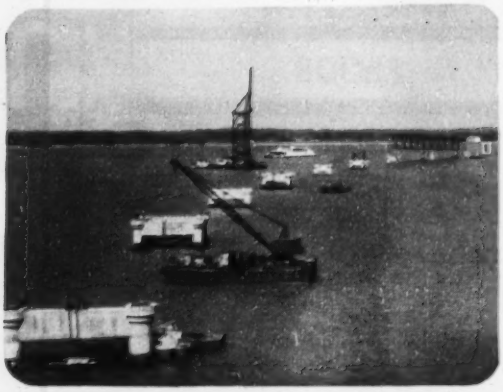
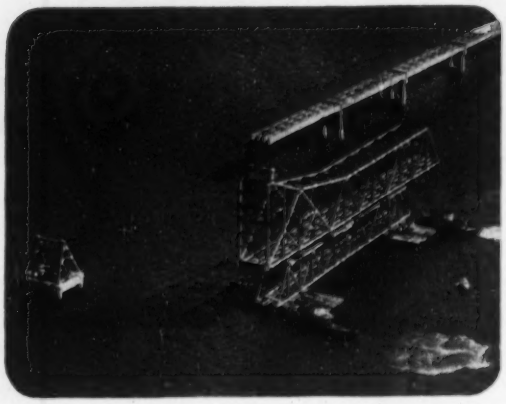
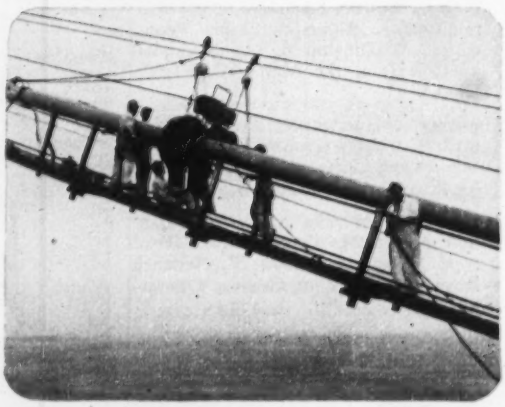
BETHLEHEM STEEL







Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Me., Rockland**—SUBMARINE CABLE—B.A. 1/19—Dist. P. Wks. Office, 495 Summer St., Boston, Mass., submarine cable from Holiday Beach to Trial Course Marker on Sheep Island, U.S.N. Trial Course, NOY 81125, Spec. 40143. Plans deposit $10.

† **Me., Winter Harbor**—B.A. 1/19—P. Wks. Office, 495 Summer St., Boston, Mass., addn. to water supply, Radio Station, NOY 91081, Spec. 40105, $208,000. Plans deposit $10.

† **Mass., Lynn**—B.A. 1/19—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, track and road work, U. S. Naval Industrial Reserve Gear Plant, NOY 81067, Spec. 40093 (SF). Plans deposit $10.

† **R. I., Quonset Point**—HEATING PLANT—B.A. 1/26—P. Wks. Office First Naval Dist., 495 Summer St., Boston, Mass., central heating plant exten.; 43x70x70 ft., heating plant addn. and 2 story 12x42 ft. personnel sanitary facilities; 150,000 #/ hour boiler, 900# p.s.i.g. to operate at 380 p.s.i.g. with auxiliaries and appurtenances; supports for new deaerating feed water heater, storage tanks and oil booster pumps, U. S. Naval Air Station, NOY 29585, Spec. 32148. Plans deposit $60. CD 10/12, under LB.

† **N. H., Portsmouth**—RUNWAY, TAXIWAY, etc.—B.A. 1/29—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., 10,500 ft. runway, taxiway, aprons, aircraft refueling sys., clearing, grubbing, excavating, approx. 5,000,000 cu. yd.; fill, 3,500,000 cu. yd., runway, taxiway; 238,000 sq. yd.; 4 in. b.conc. pavement, 941,000 sq. yds. Portland cement 16 in. concrete pavement, drainage, water lines, manholes, 29x58 ft. vault, fourteen 34x59 ft. pumphouses, 12 hydrants, Portsmouth Air Force Base, ENG-19-016-54-35. Plans deposit $50. Hayden, Harding & Buchanan, 361 St. James Ave., Boston, Mass., archts. CD 7/20, under LB.

BIDS ASKED—BUILDINGS

▲ **Conn., Woodbridge**—SCHOOL—B.A. 1/20—Regional School Bd., C. A. Means, chn. Bd. Educ., Regional School Dist. No. 5, Town Hall, Woodbridge, Regional Junior-Senior High School, off Newton Rd. $2,000,000. Plans deposit $50. Fletcher-Thompson, Inc., 211 State St., Bridgeport, archt. CD 5/4.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
S & M Constr., Inc., 30 Salmon St., Providence, R. I. CA $1,171,503, est $1,100,000. hy. and bridge F 328 (2), Barnstable and Yarmouth. CD 12/14, under LB.

▲ **CONNECTICUT**—State Hy. Comn., State Office Bldg., Hartford,
The Mariani Constr. Co., Inc., 222 Forbes Ave., New Haven, Conn., LB $1,153,996, bridge across Housatonic River, approaches Rte. 133 at Southville, Brookfield and Bridgewater;
Della Bitta Bassola, Inc., Werking St., Plantsville, Conn., LB, $227,568 bridge underpass Pigeon Hill Rd., bridge overpass at Poquonock Ave., Rte. 75, grading on Hartford-Springfield Expressway, I-139 (11), Windsor. Bids Dec. 21. CD 12/10.

CONNECTICUT—State Hy. Comn., State Office Bldg., Hartford,
Alexander Jarvis Co., 5 Dover Rd., Manchester, Conn., LB, $473,677 b. conc. 3,581 lin. ft. Middletown Expressway, U-114 (7), Middletown. Bids Dec. 21. CD 12/10.

BUILDINGS

LOW BIDS AND CONTRACTS

Richardi Constr. Co., 700 Berkshire Ave., Springfield, Mass. LB $471,368. Elementary SCHOOL, Ashland St., SPRINGFIELD, MASS. City, P. Bldgs. Dpt., Municipal Bldg., Springfield, Mass. Bids Dec. 21. CD 12/15.

Wadhams & May Co., 15 Lewis St., Hartford, Conn., LB $428,855, Elementary SCHOOL, Keney St. area, MANCHESTER, CONN. Town Bd. Educ., Town Hall, Manchester, Conn. Bids Dec. 22. CD 12/7.

▲ **New England General Constr. Co.**, 341 State St., New Haven, Conn., LB, $1,190,000, Woodrow Wilson High SCHOOL addn., Huntington Hill Ave., MIDDLETOWN, CONN. Town Special Building Comn., Huntington Hill Ave., Middletown, Conn. Bids Dec. 18. CD 11/30.

▲ **F. Peaslee, Inc.**, 15 Lewis St., Hartford, Conn., LB $341,922, Elementary SCHOOL, Black Rock State Park, THOMASTON, CONN. Town Bd. Educ., Thomaston, Conn. Bids Dec. 18. CD 12/4.

Wadhams & May Co., 15 Lewis St., Hartford, Conn., LB $466,768 Parker Farms Area SCHOOL, WALLINGFORD, CONN. Town Bldg. Comn., Town Hall, Wallingford, Conn. Bids Dec. 17. CD 12/4.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲ **N. Y., Mineola**—B.A. 1/19—Bd. Supervs. Nassau Co., Old County Court House, lateral sewers in Franklin Square Collection Dist. 2, Contr. 1002-2-FS-2. $3,400,000. CD 9/19/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore,
Cumberland Constr. Co., Box 507, Cumberland, Md. LB $227,726, grading, drainage, surf. 2.582 mi. State Rte. 135, Swanton-Bloomington Rd., Constr. G 260-4-615, Garrett Co.;
H. T. Campbell Sons Corp., Towson, Md. LB $109,404, resurf. 2.55 mi. State Rtes. 718 and 151, near Baltimore, Contr. B 675-415. Bids Dec. 22. CD 12/9.
Francis O. Day Co., Inc., Rockville Pike, Rockville, Md. LB $148,195, repaving for owner, various locations Contr. 1339, Montgomery and Prince George's Counties, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. CD 4/16/46.
Mario Anelio & Sons, Inc., 300 Edgewood St., Baltimore, Md. LB $165,684. Items 2, 3, 4, 5, 9, 10 and 11, Contr. 355 D.S.&W., group bids, TOWSON, MD. Comrs. Baltimore, Co., Court House, Towson, Md. Bids Dec. 17. CD 12/7.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Leon D. DeMatteis Constr. Co.**, 827 Elmont Rd., Elmont, N. Y., CA $2,273,167, Senior HIGH SCHOOL, OCEANSIDE, N. Y. Bd. Educ., Oceanside, N. Y. Bids Nov. 30. CD 10/16.

Chicago Bridge Co., 1625 K. St. N.W., Wash., D. C. CA $291,000, steel STORAGE TANKS, 610 Gusryan St., BALTIMORE, MD. Esso Standard Oil Co., 15 W. 51 St., New York, N. Y. CD 12/17.
Jack Meyerhoff & Sons Co., 900 Court Square Bldg., Baltimore, Md. Owner Builds. forty-seven 16x32x28 ft. brick DWELLINGS, 7100 block Eastwood Dr., BALTIMORE, MD. CD 4/20.
▲ † **Ajax Constr. Co., Inc.**, 1107 19 St. N.W., Wash., D. C. CA $1,373,081, PLANT SCIENCE BLDG., SOIL PREPARATIONS BLDG., CLASSIFIED BLDG., CAMP DETRICK, MD. U. S. Eng., First and Douglas Sts. N.W., Wash., D. C. Awarded 12/22. CD 10/8, under LB.
Hogan & Flatt Realty Co., Inc., 813 Lenton Ave., Baltimore, Md. Owner Builds. $384,800. 26 frame HOUSES, Cinder Rd., TIMONIUM, MD.

Jos. Meyerhof Co., 10 E. Fayette St., Baltimore, Md. Owner Builds. $301,750. 50 COTTAGES, Roper, Richmond and Woodcroft Rds., TOWSON, MD.

Dan Pollin, Inc., 1414 Upshur St. N.W., Wash., D. C. Owner Builds, $408,000, three 3 story, brick, cinder block APARTMENTS, 5100 block Eastern Ave. N. E., WASH., D. C. Berla & Able, 1636 Connecticut Ave. NW., Wash., D. C., archts.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	**Latin America**
Sewers, Waste Disposal	**Public Buildings**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects inviived except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
B.A.	**Bids Asked**
ENR	**Engineering News-Record**
CD	**Engineering News-Record Construction Daily**

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Va., Norfolk**—ELECTRICAL FACILITIES—B.A. 1/19—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, altering electrical facilities at Naval Amphibious Base, Little Creek, NOY 82848, Spec. 42705. Plans deposit $10.

† **Tennessee**—B.A. 2/24—U. S. Eng., P.O. Box 97, Memphis, Zone 1, concrete mattresses, Cates and Richardson, landings, 180,000 squares, Inv. 54-68.

BIDS ASKED—BUILDINGS

Ga., Dallas—SCHOOL—B.A. 1/21—Paulding Co. Bd. Educ., Dallas, consolidated school, $750,000.

Tenn., Knoxville—CLUB HOUSE—B.A. 3/1—Knoxville Boys Club, Jessamine St., club house, $350,000. Painter & Weeks, Daylight Bldg., archts. CD 12/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **GEORGIA**—State Hy. Dpt., Atlanta,
Georgia-Alabama Paving Co., P.O. Box 367, Columbus, Ga., CA, $705,353, 8.613 mi. FI-001-2 (7) Houston Co.; CA $424,885, 5.991 mi. FI-009-2 (3), Bryan and Liberty Counties:
Hewitt Contg. Co., 822 12 St., Columbus, Ga., CA, $135,040, 4.464 mi. S-08-15 (2), Chattooga Co.; CA, $243,271, 9.031 mi. S-1628 (1), Contract 1, Walker and Chattooga Counties;
Coffee Constr. Co., Eastman, Ga., CA, $123,856, 5.811 mi. S-0573 (4), Telfair Co.;
Oliver Greene & Son, Gray, Ga., CA, $123,601, 5.661 mi. S-1432 (1) and S-1640 (2), Contract 1, Jones Co.;
Ledbetter-Johnson Co., Rome, Ga., CA, $509,701, 6.101 mi. F-017-3 (3), Contract 1, Floyd Co.;
W. L. Robinson Const. Co., College Park, Ga., CA, $192,289, 6.129 mi. S-0762 (8), Lamar and Butts Counties;
Chas. R. Shepherd, Inc., 1275 Oxford Road NE., Atlanta, Ga., CA, $210,830, 2.644 mi. S-1238 (4), Hall Co.;
R. T. Smith, 981 Lullwater Rd. N.E., Atlanta, Ga., CA, $233,101, 5.674 mi. S-0692 (7), Haralson Co. Grand total $2,801,927. Bids Dec. 18.

† **Batson-Cook Co.**, West Point, Ga., CA, $316,592, armament and electronics shop, Turner Air Force Base, Inv. 54-13, ALBANY, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Dec. 22. CD 12/11.

ALABAMA—State Hy. Dpt., Montgomery,
Newell Brothers Constr. Co., Hope Hull, Ala., LB, $106,162, bridges FA-S-42 (6), Clarke Co.;
Montgomery Constr. Co., Box 255, Montgomery, Ala., LB, $66,994, bridges 0.047 mi. FA-S-580 (1), Lowndes Co.; LB, $119,638, 0.189 bridges FA-S-581 (1), Lowndes Co. Bids Dec. 18. CD 11/25.

ALABAMA—State Hy. Dept., Montgomery,
Tuscaloosa Contg. Co., 3004 9 St., Tuscaloosa, Ala., LB, $121,829, 5.804 mi. FA-42 (5) Clarke Co.; LB $113,993, 5.756 mi. FA-S-631 (1), Clarke Co.;
C. R. Pickle & Son, Shelbyville, Tenn., LB, $79,808 6.177 mi. FA-S-42 (6), Clarke Co.;
Clyde O. Mitchell, 104 N. 44 St., Birmingham, Ala., LB, $261,727, 7.022 mi. F-200 (7), Cleburne Co., Proposal A;
Hooper Constr. Co., Box 4471, Coral Gables, Fla., LB, $644,931, 6.266 mi. U and U.I.-352 (2), Montgomery Co. Proposal A.
A. L. Crow Constr. Co., Box 421, Selma, Ala., LB, $87,733, 8.805 mi. FA-S-501 (2) Cleburne Co.;
M. A. Evans Constr. Co., Rt. 1, Wetumpka, Ala., LB, $169,896, 23.33 mi. SACP-7185-A, 7192-B&C and 7257-A, Coffee Co. Bids Dec. 18. CD 11/25.
H. N. Donahoo, 520 1 Ave. N., Birmingham, Ala., CA, $124,764 Campus streets, roads, etc. BIRMINGHAM, ALA. Howard College, 772 2 Ave. Birmingham, Ala.
J. B. Talley & Co., St. Martinville, La. CA $164,943. concrete street paving, Proj. C-110, NEW IBERIA, LA. City, New Iberia, La. Bids Dec. 21. CD 11/24.
Yor-Wic Constr. Co., P. O. Box 4181, Centenary Station, Shreveport, La. CA $154,205. water distr. sys. addn., PORT ALLEN, LA. Town, Port Allen, La. Bids Dec. 18. CD 12/10.
M. & W. Constr. Co., P. O. Box 116, Tupelo, Miss., CA $157,635. WW Imprvs., MILLINGTON, TENN. City, Millington, Tenn. Bids Dec. 7. CD 11/23.
M. & W. Constr. Co., P. O. Box 116, Tupelo, Miss. CA $334,500, sanitary sewer Imprvs., MILLINGTON, Tenn. City, Millington, Tenn. Bids Dec. 7. CD 11/23.

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BUILDINGS

LOW BIDS AND CONTRACTS

▲ **J. N. Bray Co.**, Valdosta, Ga., CA, **$1,445,639**, NEGRO HIGH SCHOOL and WHITE HIGH SCHOOL, DOUGLAS, GA. Coffee Co. Bd. Educ., Douglas, Ga. Bids Dec. 22. CD 12/29, under LB.

▲ **C. F. Wheeler Builder**, 810 N.W. 72 St., Miami, Fla., CA, **$1,094,000**. Julian S. Eaton RESIDENCE HALL, CORAL GABLES, FLA. University of Miami, 1200 Campo Santo Ave., Coral Gables, Fla. Bids Dec. 9. CD 12/11.

Benedict & Jordan, 2236 N.W. Miami Court, Miami, Fla., CA, **$300,000** APARTMENT, MIAMI, FLA. Dr. C. S. Werblow, Lincoln Road Bldg., Miami Beach, Fla.

Gottlieb & Co., 1506 SW 3 Ave., Miami, Fla. Owner Builds, **$400,000**. 40 RESIDENCES. MIAMI, FLA.

Burk Constr. Corp., 1017 Kane Concourse, Miami Beach, Fla., CA, **$489,720**, Holmes Elementary SCHOOL, MIAMI, FLA. Dade Co. Bd. P. Instruction, 275 N.W. 2 St., Miami, Fla. CD 11/5/43.

▲ **Taylor Constr. Co.**, 2875 N. Lejeune Rd., Miami, Fla., CA, **$4,000,000**, HOTEL, MIAMI BEACH, FLA. Fountainbleau Hotel Corp., 2875 N. Lejeune Rd., Miami, Fla.

Brice Building Co., P.O. Box 1028, Birmingham, Ala., CA, **$259,500**, AUTO SALES and SERVICE BLDG., BIRMINGHAM, ALA. Drennen Motor Co., 401 S. 20 St., Birmingham, Ala. Bids Dec. 23. CD 12/15.

Barksdale & LeBlanc, P.O. Box 1567, Baton Rouge, La. LB **$441,600**. OFFICE, BATON ROUGE, LA. Baton Rouge Building & Loan Assn., 334 Laurel St., Baton Rouge, La. Bids Dec. 22. CD 12/10.

A. L. Sizeler Constr. Co., 3701 Jefferson Hy., New Orleans, La. Owner Builds. **$500,000**. 52 RESIDENCES, NEW ORLEANS, LA.

Harmon Constr. Co., 100 S. Indiana St., Oklahoma City, Okla., CA **$400,000**. CHURCH, JOHNSON CITY, TENN. First Presbyterian Church, Johnson City, Tenn.

State of Tennessee, Nashville, Tenn., rejected bids Dec. 16, DORMITORY, at State Deaf School for Negroes, KNOXVILLE, TENN. LB **$303,639**. CD 12/29, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Ill., **River Grove**—B.A. 1/21—Village, Village Hall, 1,250,000 gal. concrete reservoir and pumping station, $125,000. Consoer, Townsend & Assocs., 351 E. Ohio St., Chicago, Zone 11, engrs.

BIDS ASKED—BUILDINGS

Mich., Grand Rapids—SERVICE—B.A. 1/26—City, Bd. Educ., H. P. Harrington, secy., 143 Bostwick Ave., brick, concrete school service structure, $350,000, Chris Steketee, 504 Murray Bldg., archt. CD 7/22.

▲ **Wis., Oshkosh**—SCHOOL—B.A. 1/27—Bd. Educ., Oshkosh, East Side Junior High School, $1,110,000. Plans deposit $50. Extended date. Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., L. H. Reink, 109 N. Main St., Sanstedt & Knoop, T. H. Irion, 22 Otter St., archts. CD 12/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—Ohio Turnpike Comn., 139 E. Gay St., Columbus,
S. J. Groves & Sons Co., Elyria, O., CA **$6,334,328**, Contr. C-60, 61, 62, grading, drainage, structures and paving, approx. 12.9 mi. of the Turnpike, Williams Co.;
Lombardo Bros. Constr. Co., 3600 Ridge Rd., Cleveland, O., CA **$4,808,624**, Contr. C-22, grading, drainage, structures and paving, approx. 4.5mi. of the Turnpike, Cuyahoga and Lorain Counties. Bids Dec. 18. CD 12/22, under LB.

▲ **OHIO**—Ohio Turnpike Comn., 139 E. Gay St., Columbus,
Badgett Mine Stripping Corp., Central States Constr. Co. & Soo Constructors, Inc., Winona, Minn., CA **$11,517,407**, Contr. C-43, 44, 45, grading, drainage, structures and paving, approx. 12.5 mi. of the Turnpike, Ottawa and Wood Counties. Bids Dec. 10. CD 12/2.

▲ **OHIO**—Ohio Turnpike Comn., 139 E. Gay St., Columbus,
Johnson-Greene Co. & Sargent Constr. Co., 416 E. Huron St., Ann Arbor, Mich., CA **$10,581,087**, Contr. C-47, 48, 49, grading, drainage, structures and paving approx. 12 mi. of the Turnpike, Lucas Co. Bids Dec. 10. CD 11/10.

Spinello Constr. Co., 249 Wallace St., Orange, N. J. LB **$151,590**, clean and reline approx. 21,000 ft. two 60 in. water mains in Rockefeller Park Blvd. 1, Wade Park Ave. and Superior Ave. to Fairmount Reservoir; clean and reline approx. 8,900 ft. 36 in. water main from Parma Reservoir via Pearl to Ridge Rds., CLEVELAND, O. City, City Hall, Cleveland 14, O. Bids Dec. 18. CD 12/10.

Thompson-Conie Co., 1340 Windsor Ave., Columbus, O., CA **$218,323**, twin-barrel, 72 in. pipe for storm sewer in West Columbus from vicinity of Harmon Ave. and Stimmel Rd. to Mound St., COLUMBUS, O. City, City Hall, Columbus, O. CD 11/19/45.

▲ **INDIANA**—State Hy. Comn., State House Annex, Indianapolis; Zone 4,
Olinger Constr. Co., Huntingburg, Ind., LB, **$733,089**, est. $339,432, 7.482 mi. State Rd. 64, Huntingburg, Pike and Dubois Counties; LB **$271,228**, 2.346 mi. State Rd. 161, N. of Holland, Dubois Co.;
L. P. Cavett Co., 500 Shepherd St., Lockland, O., LB, **$143,156**, est. $339,655, 3.993 mi. Versailles and Osgood, Ripley Co.;
Mohr Constr. Co., Kokomo, Ind., LB, **$513,999**, est. $537,587, 0.606 mi. and 12.373 mi. State Rd. 22, Ridgway, Carroll and Howard Counties;
rejected bids Dec. 22, 1.256 mi. U.S. 51, Hammond, Lake Co. LB, **$349,367**. CD 12/1.

▲ **ILLINOIS**—State Div. Hys., Springfield,
Orr Constr. Co., 27 E. 19 Pl., Chicago Heights, Ill., CA, **$747,216**, c. conc. base course wid'n. 3.1 mi. US. 6, Cook Co.; CA **$936,000** c. conc. 7.87 mi. U.S. 66, McLean Co.;
O'Connor Constr. Co., 320 Reisch Bldg., Springfield, Ill., CA, **$667,509**, c. conc. 5.64 mi. U.S. 66, Logan Co.;
Standard Paving Co., 308 W. Washington St., Chicago 6, Ill., CA, **$803,000**, c. conc. 6.93 mi. U.S. 45, Coles and Douglas Counties;
General Paving Co., 30 E. John St., Champaign, Ill., CA, **$809,726**, c. conc. 6.39 mi. U.S. 45, Champaign and Ford Counties. Bids Dec. 15, awarded Dec. 29. Grand total $3,963,451. CD 12/21, under LB.

Geo. D. Hardin Co., 2130 Michigan Ave., Chicago, Ill., CA, **$194,842**, interceptor sewer from north works thru Lincoln, Skokie to Evanston, CHICAGO, ILL. Sanitary District of Chicago, 910 S. Michigan Ave., Chicago 5, Ill. Bids Nov. 30.

MICHIGAN—State Hy. Dpt., Charles M. Ziegler, comr., Lansing,
A. B. Vickery Co. & Koch Constr. Co., 239 W. Center St., Milwaukee, Wis. CA **$560,616**, est. $560,000. 44 ft. c. conc. 1.86 mi., water mains, sewers U 55-6 C3 (U 1738), Menominee Co. CD 12/28, under LB.
Rosso Excavating Co., Mount Clemens, Mich. CA **$39,637**. Contr. 2.6 and 8 in. water mains, Finlay, Coleman and Webster Sts.;
D'Angelo & Polecilli, 4105 Townsend St., Detroit, Mich. CA **$46,525**. Contr. 1, 12,680 lin. ft. 6 and 8 in. water mains, Stair, Grandy, 15 Mile Rd., Vermander and Woodward Sts.; CA **$40,850**. Contr. 3, water mains, Gratiot, Stafford and Nicke Sts., etc., Clinton, MOUNT CLEMENS, MICH. Clinton Twp., Elmore E. Lester, clk., 1129 Gratiot Ave., Mount Clemens, Mich. Bids Nov. 18. CD 11/12.

BUILDINGS

LOW BIDS AND CONTRACTS

Chesterfield Lumber Co., Chesterfield, Ind., Owner Builds, **$300,000** or more, HOMES, CHESTERFIELD, IND.

▲ **Cooper & Ryan**, 2801 9 Ave., Gary, Ind., Own Forces, **$4,000,000**, 390 HOMES in and near GARY, IND.

Auman & Co., Carmel, Ind. Owner Builds, **$350,000** HOMES in new addition, Ind. Rd. 431 and 116 St., INDIANAPOLIS, IND.

Gerhardt F. Meyne Co., 308 W. Washington St., Chicago 6, Ill., CA **$750,000**, BANK expansion, CHICAGO, ILL. American National Bank & Trust Co., 33 N. LaSalle St., Chicago, Ill. Skidmore, Owings & Merrill, 100 W. Monroe St., Chicago 3, Ill., archts. Awarded Dec. 14.

Hope Constr. Co., 3520 N. Knox St., Chicago, Ill., CA, **$300,000**, SHOPPING CENTER, LIBERTYVILLE, ILL. Middle States Development Co., 2342 S. Grove St., Chicago, Ill. Awarded Dec. 21. CD 11/6.

▲ **Harrison Homes, Inc.**, 116 E. North Ave., North Lake City, Ill. Own Forces, **$2,400,000**, 179 brick, ranch type, HOMES with GARAGE, LOMBARD, ILL.

▲ **Harrison Homes, Inc.**, 3221 Harrison St., Chicago, Ill. Own Forces, **$1,500,000**, 150 HOMES, LOMBARD, ILL. Tuschschmidt & Assocs., 179 W. Washington St. Chicago 2, Ill., archts.

Ragnar Benson, 4744 W. Rice St., Chicago 51, Ill., CA, **$500,000**, 68,000 sq. ft. WAREHOUSE, NILES, ILL. Greyhound Corp., 141 W. Jackson Blvd., Chicago 4, Ill. Victor L. Charn, 4744 W. Rice St., Chicago, Zone 51, archt. Awarded Dec. 14.

▲ **Dura-bilt Constr. Co.**, 4517 Oakton St., Skokie, Ill., Own Forces, **$1,000,000**, 60 HOMES, SKOKIE, ILL. Emil J. Minx, 4517 Oakton St., Skokie, archt.

Alstrom Constr. Co., Muskegon Heights, Mich. CA **$494,530**. 1 and 2 story, brick stone CHURCH, MUSKEGON, MICH. First Congregational Church Parish, Muskegon, Mich. Bids Dec. 17. CD 11/24.
Walter L. Couse & Co., 12740 Lyndon St., Detroit, Mich. CA **$475,000**. 1 story, bsmt., brick, steel, block stone CHURCH, ROYAL OAK, Mich. First Presbyterian Church, 529 Hendrie St., Royal Oak, Mich. CD 8/27.
Ray Misch & Sons, 12746 Griggs St., Detroit, Mich. CA Est. **$600,000**. 2 story, brick, steel high SCHOOL, Orchard Lake Rd. and Commerce Rd., WEST BLOOMFIELD, MICH. West Bloomfield Twp., School Dist. 5, West Bloomfield, Mich. Bids Dec. 9. CD 11/20.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Arkansas**—B.A. 1/19—U. S. Eng., P.O. Box 60, Vicksburg, Miss., Lot I, and Lot II, Arkansas River Bank Stabilization Works, pile dike construction, Lot 1, Item D-81-0-R, New Gascony Reach, Turlock, approx. 81 mi. above the mouth at Turlock; and Lot II, Item D-77-4-R, Brunsons Crossing Reach, Richland Bend approx. 77.4 mi. above the mouth of Richland Bend.
Montana—RURAL DISTRIBUTION LINES—B.A. 2/5—McCone County Electric Co-operative, Circle, 301.3 mi. rural distr. lines, McCone Co. Extended date. Associated Engineers, Billings, engrs. CD 12/1.

BIDS ASKED—BUILDINGS

▲ **Minn., St. Paul**—SCHOOL—B.A. 1/26—Bd. Educ., F. E. Conner, supt., J. LaNasa, city purch, agt., 253

City Hall, Hazel Park Junior High School Whitebear Ave. and Maryland St. $1,500,000. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, archts. CD 8/20/52.

Minn., Thief River Falls—COURT HOUSE—B.A. 1/26—Pennington Co., C. W.Rodekuhr aud., 65x154 ft. courthouse, $500,000, Goss & Co., Moorhead, archts. CD 6/16/49.

SOON LETS CONTRACT—BUILDINGS

Colo., Denver—PLANT—Stanley Aviation Corp., Municipal Airport, Buffalo, N. Y., soon lets contract 1 story, 150x300 ft., and 50x300 ft. cinder block, steel, assembly plant near Stapleton Field, $500,000. Jared Morse, 1050 Cherokee St., engr. and archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

SOUTH DAKOTA—State Hy. Comm., Pierre, Megarry Bros., St. Cloud, Minn., CA $201,486, base course (pt.) and bit. surf. 13.433 mi. Proj. F 190 (10), Campbell and Walworth Counties;

Myrl Clark, Tyndall, S. D., CA $192,949, base course and bit. surf. 13.328 mi., Proj. F 455 (10), Shannon Co.;

J. H. Beckman Constr. Co., Sioux Falls, S. D., CA $123,389, grading, etc. 3.417 mi. Proj. F 190 (10), Campbell and Walworth Counties. Grand total $517,824. Bids Dec. 22. CD 12/10.

▲ Utility Contractors, Inc., 610 N. Main St., Wichita, Kan. LB $1,399,975. sewerage imprvs., West Side sewer main, Sewer 22, Contr. 1, WICHITA, KAN. City, City Hall, Wichita, Kan. Bids Dec. 22. CD 12/16.

Davidson-Steel, Inc., Box 792, Fort Smith, Ark., CA $380,977, est. $400,000, pumping station and grit chamber, TULSA, OKLA. City, City Hall, Tulsa, Okla. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. Awarded Dec. 15. CD 3/5/52.

F. R. Orr Constr. Co., 4414 Vine St., Denver, Colo., LB, $530,747, administration bldg. addns., at airport, DENVER, COLO. City and Denver Co., City and County Bldg., Denver, Colo. Bids Dec. 15. CD 7/5/51.

BUILDINGS

LOW BIDS AND CONTRACTS

Coffield Constr. Co., Rockdale, Tex. Owner Builds. $310,000. 36 frame DWELLINGS, concrete slab fdn., ROCKDALE, TEX. CD 12/24.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

Utah, Vernal—ARMORY—B.A. 1/27—Utah National Guard, Brig. Gen. Maxwell E. Rich, Salt Lake City, armory, 138 S 2nd East St. Plans deposit $20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

UTAH—State Road Comm., Capitol, Salt Lake City, Young & Smith Constr. Co., 306 Beason Bldg., Salt Lake City, Utah, CA $642,337, est. $723,110, graded roadway and 3 concrete structures over 20 ft. span, 7.9 mi. Emory-Castle Rock, Summit Co. Bids Nov. 24. CD 12/2, under LB.

† Gibbons-Reed Co., 825 W. 9th St., Salt Lake City, Utah, CA, $903,300, est. $1,000,000. runways, taxiways and airfield lighting, Nellis Air Force Base, ENG-04-353-54-35, LAS VEGAS, NEV. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Dec. 23. CD 12/2.

N. P. Van Valkenburg Co., 8609 San Vicente St., South Gate, Calif. LB, $383,281, est. $405,000, sanitary sewers in Loma Alta Canyon Sewer District, OCEANSIDE, CALIF. City, 704 3 St., Oceanside, Calif. Bids Dec. 23. CD 11/20.

BUILDINGS

LOW BIDS AND CONTRACTS

Brunzell Constr. Co., 3945 Higuera St., Culver City, Calif., CA, $843,782, 42,000 sq. ft. rein.-con. LaHabra-Lowell High SCHOOL, FULLERTON, CALIF. Fullerton High School District, Fullerton, Calif. Bids Dec. 23. CD 12/2.

Smith-Campbell Co., 6510 Cherry Ave., Long Beach, Calif., LB, $360,148, Benjamin F. Tucker SCHOOL, LONG BEACH, CALIF. Long Beach Bd. Educ., 715 Locust Ave., Long Beach, Calif. Bids Dec. 23. CD 12/15.

† U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. cancelled bids to have been opened Dec. 22, PROPELLANT FACILITIES at jet propulsion laboratory, ENG-04-353-54-38, PASADENA, CALIF. $600,000. CD 12/1.

Baruch Corp., 321 S. San Vicente St., Los Angeles, Calif., LB, $528,400, North Elementary SCHOOL, WEST COVINA, CALIF. West Covina School District, 1225 E. Cameron Ave., West Covina, Calif. Bids Dec. 22.

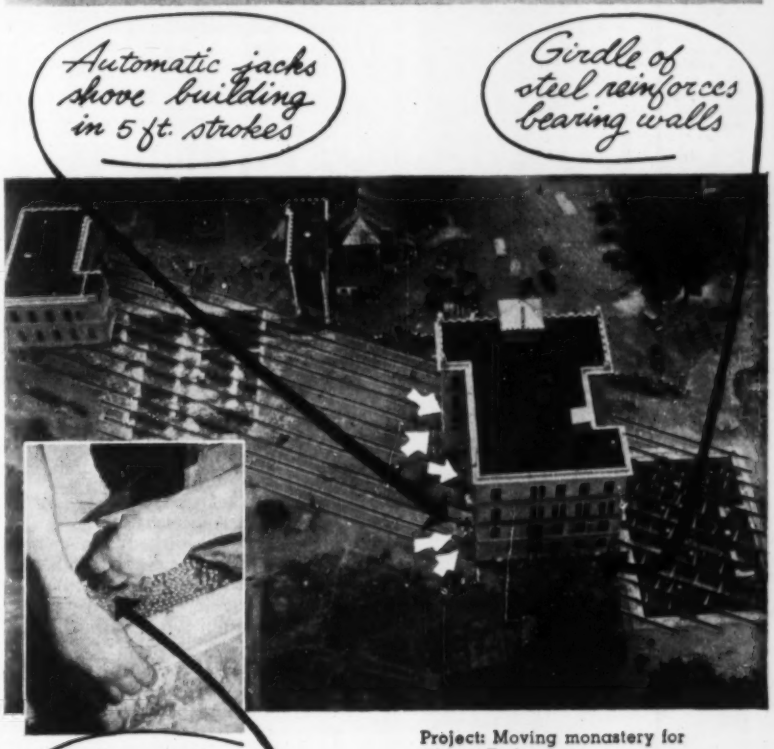
CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Willat Constr. Co., 167 Hillside Ave., Westmount, Que. and H. J. O'Connell Ltd., 6460 Cote Liesse Rd., Montreal, Que., CA, $400,000, golf course on Pie IX Blvd., ST. VINCENT DE PAUL, QUE. Riviera Country Club, 167 Hillside Ave., Westmount, Que. A. P. Blackburn, 19 Staynor Ave., Montreal, Que., engr. D. J. Spence, 3568 University Ave., Montreal, Que., archt.

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS


Automatic jacks shove building in 5 ft. strokes
Girdle of steel reinforces bearing walls
Building rolls on these ball bearings—300 per ft.

Project: Moving monastery for Oblate Fathers, at Cap-de-la-Madeleine, Quebec, Can.

Consulting engineers: Surveyer, Nenniger & Chenevert, of Montreal.

3,100-TON MONASTERY MOVED ON 300,000 STEEL BALL-BEARINGS

Nothing rolls like a ball . . . that was the principle applied by Spencer, White & Prentis engineers in this unique job. Steel balls of 5/16-inch diameter were placed between runner and track, in a concentration of 300 balls per ft. The heavy 4-story masonry structure was then smoothly rolled, on the diagonal, to a new foundation 216 ft. away.

With customary roller method, there is a tendency of the rollers to skew, causing a building to move sideways. Such possibilities were precluded by this new technique. Incidentally, it is believed to be the first time that ball-bearings have been used to move a building.

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BUILDINGS

LOW BIDS AND CONTRACTS

Park Lane Projects Ltd., 10327 Jasper Ave., Edmonton, Alta. Owner Builds, $300,000, 72 unit, APARTMENT with GARAGES, EDMONTON, ALTA.

Bird Constr. Co. Ltd., 12525 127 Ave., Edmonton, Alta., CA, $900,000, 7 story 114x186 ft., concrete APARTMENT BLOCK, Jasper Ave., EDMONTON, ALTA. Paramount Development Corp., 496 Church St., Toronto, Ont. Peter Caspari, 496 Church St., Toronto, Ont., archt. CD 4/16.

J. F. Jean, 3839 E. Sherbrooke St., Montreal, Que., Owner Builds, $325,000, three 3 story, 58x80 ft., concrete, brick, stone APARTMENT BLOCKS, MONTREAL, QUE.

PUERTO RICO

BIDS ASKED—BUILDINGS

Puerto Rico, Hato Rey—DWELLING UNITS—B.A. 1/28—Municipal Housing Auth. of the Capital of Puerto Rico, "Cesario San Antonio", Avenida Fernandez Juncos, Puerta de Tierra, first section of three sections. Housing Proj. PR 2-7-1, Nemesio R. Canales, 298 dwelling units in 24 rein.-con. apartment bldgs., incl. utilities, site imprvs. at Fonalledas Farm. Plans deposit $150. CD 5/26/43.

Proposed Projects

STREETS AND ROADS

▲ **Tex., Edinburg**—City, hard type paving for all unpaved streets in city $1,500,000; concrete curbs and gutters, $100,000. Sigler, Clark & Winston, Weslaco, consult. engrs. CD 11/23.

▲ **Tex., San Antonio**—Bexar Co., Precinct 2, Court House, bond election Jan. 21, completion of Loop 13 around the city, $1,475,000. Extended bond election date. C. I. Swan, co. engr. CD 10/14.

▲ **Tex., San Antonio**—City, Jack White, mayor, City Hall, Military Plaza, bond election Jan. 23, Part 1, street imprvs., paving, $750,000; Part 2, street imprvs., paving, $715,000; Part 3, street imprvs., paving, $845,000; Part 4, street imprvs., paving, $991,000; widening and retopping portion S. New Braunfels Ave., $315,000; portion of freeway or expressway program, $10,500,000. Tom Coghill, city engr. CD 12/22.

EARTHWORK, WATERWAYS

▲ **IDAHO**—Washington Water Power Co., et al, W. 825 Trent St., Spokane, Wash., 576 ft. dam at Bruces Eddy and 596 ft. dam at Penny Cliffs, both rockfill and both on Clearwater River to produce 536,000 kw. $305,000,000.

▲ **Tex., Beaumont**—City, City Hall, drainage proj., open and closed drains, pipe lines. $4,000,000. Stone & Pitts, 1872 Calder St., consult. engrs. CD 11/21/45.

▲ **Tex., San Antonio**—City, Jack White, mayor, City Hall, Military Plaza, bond election Jan. 23, imprv. portion San Antonio River inside city limits, dredging, widening, straightening, etc., $942,724; appurtenant drainage facilities in banks, etc. of San Antonio River Imprv. Proj., $200,000. Tom Coghill, city engr. CD 1/22.

▲ **Washington**—Puget Sound Power & Light Co., Skinner Bldg., Seattle, Zone 1, hydro-dam across Upper Baker River, Concrete, $12,000,000. CD 7/24/52, under Industrial Buildings; hydro-dam across Columbia River at Wells locations, Aswell, $193,000,000.

PUBLIC BUILDINGS

Calif., Coachella—SCHOOLS—Coachella Valley Union High School Dist., Coachella, voted $850,000 bonds, schools, Bowen, Rule & Bowen, 2835 Gilroy St., Los Angeles, consult. engrs. CD 12/1.

▲ **Calif., Ontario**—SCHOOL—Chaffey Union High School District, 5 and Euclid Sts., plans by Neptune & Thomas, 567 E. Green St., Pasadena, 108,000 sq. ft. high school, $2,000,000. CD 2/6.

▲ **Calif., Riverside**—SCHOOL—Riverside Bd. Educ., 3954 12 St., plans by B. C. Moise Joe, 3514 9 St., and H. O. Ruhman, Mission Inn, Riverside, high school, Magnolia and Jefferson Sts. $1,000,000. Henry L. Wright, 816 W. 5 St., Los Angeles, consult. archt. CD 9/10/52.

Calif., Selma—SCHOOL—Selma Elementary School District, Selma, $195,000 bond election Feb. 16, for school addns. $949,975.

▲ **Conn., Plainville**—SCHOOL—Town, Br. Educ., c/o Walter H. Hiltsold, chn., plans by William J. Provoost, 421 Main St., Stamford, high school, $1,600,000. CD 7/20.

▲ **Mass., Springfield**—SCHOOL—City, P. Bldgs. Dpt., City Hall, plans by Robert A. Greene & Elroy Webber, 280 Madison Ave., New York, N. Y., Junior High School, Bradley and Wilbraham Rds., $1,500,000. CD 4/23.

Mich., Benton Harbor—SCHOOL—City, Bd. Educ., plan by Maurer & Maurer, 312 Lafayette Bldg., South Bend, Ind., 2 story, brick, steel high school addn., $900,000. CD 11/26/51.

▲ **Mich., East Grand Rapids**—SCHOOL—City, Louis F. Battles, clk., $1,250,000 bond election Feb. 15, brick, steel high school, 2 elementary schools. CD 6/15/53.

▲ **Mich., Midland**—SCHOOLS—City, Bd. Educ., voted $4,700,000 bonds, high school, elementary school, 2 school addns.

▲ **Mich., Northville**—HOSPITAL—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, plans by O'Dell, Hewlett & Luckenbach, 950 N. Hunter Blvd., Birmingham, brick, concrete psychiatric hospital for children, Northville State Hospital, $1,815,000. CD 116/51.

▲ **O., Oxford**—HOSPITAL—Municipality, Oxford, plans by Inscho, Brand & Inscho, 60 E. Broad St., Columbus, McCullough Memorial Hospital, $1,300,000. CD 3/4; under Commercial Buildings.

O., Waverly—SCHOOL—Waverly School Dist., Waverly, elementary school. $900,000.

▲ **Ore., Portland**—SPORTS and CONVENTION CENTER—City, City Hall, sports and convention center in Vanport area, $8,000,000. L. G. Apperson, City Hall, city engr.

▲ **Pa., Clarks Summit**—PATIENTS BLDG.—General State Auth., 18 and Herr Sts., Harrisburg, senile patients bldg. at Clarks Summit State Hospital. $1,300,000. A. F. Jones, c/o owner, ch. engr.

Pa., Wernersville—BOILER PLANT—General State Auth., 18 and Herr Sts., Harrisburg, boiler plant for Wernersville State Hospital: $800,000. A. F. Jones, c/o owner, ch. engr.

▲ **Wash., Tacoma**—SCHOOL—School District No. 10 Central School, 601 S. 10 St., bond election Mar. 10 high school in west end, $2,000,000. Lea, Pearson & Richards, Tacoma Bldg., archts. CD 9/17.

▲ **Alta., Edmonton**—SCHOOLS—Public School Bd., Edmonton, plans by W. Butchart, c/o owner, Prince Rupert School, $1,206,000; school Belgravia, $1,000,000.

▲ **Ont., Toronto**—PARKING GARAGES—City, City Hall, two parking garages for Toronto Parking Authority, one at Yonge and Melinda Sts., $600,000; other at Adelaide and York Sts., $825,000.

▲ **Que., St. Jean Port Joli**—HOSPITAL—Quebec Dpt. Health, Quebec City, 50-bed hospital, $1,000,000. CD 12/1/49.

COMMERCIAL BUILDINGS

▲ **Calif., Garden Grove**—DWELLINGS—Lansdale Constr. Co., 12017 S. Paramount Blvd., Downey, Calif., plans by John A. Nordback, 7820 E. Firestone Blvd., Downey, 300 frame, stucco dwellings, Brookhurst and Cerritos Ave. $2,000,000.

Calif., Vallejo—HOMES—Delmar L. Goforth, 1010 Tennessee St., 1st unit of 102 homes in Rancho Del Mar Subdivision, $800,000.

Conn., Newington—HOSPITAL—Masonic Home & Hospital, Masonic Ave., plans by Norton & Townsend

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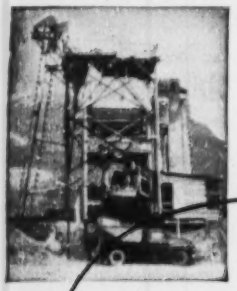
says L. G. (Bud) Waigand, Project Manager, Peter Kiewit Sons Co.



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405 Temple St., New Haven, hospital, $800,000. Ebbets-Frid & Prentice, 862 Asylum Ave., Hartford, consult. archts.

▲ **Idaho Mountain Home**—HOUSING UNITS—U. S. Eng., City-County Airport, Walla Walla, Wash., plans by Hummel, Hummel & Jones, 1324 Idaho St., Boise, 500 housing units, under Wherry act, at Air Force Base. $5,000,000. CD 11/18.

▲ **Ill., Chicago**—OFFICE—Seagram Distillers Corp., 35 E. Wacker Dr., Zone 1, office bldg., Michigan Blvd. and Pearson St. $3,500,000.

Ind., Indianapolis—SYNAGOGUE—Beth-el Zedeck Temple, Rabbi Wm. P. Greenfield, 34 and Ruckle Sts., plans by McGuire & Shook, Fletcher Trust Bldg., synagogue site on Spring Mill Rd. between W. 69 and W. 70 Sts. $800,000.

▲ **Ind., Indianapolis**—HOMES—J and L Realty Co., Lemcke Bldg., Zone 5, 200 or more national Homes. $2,000,000.

▲ **Mass., Brockton**—SCHOOL—R. C. Archdiocese of Boston, Archbishop Richard J. Cushing, D.D. LL.D, Chancery, Lake St., Brighton, high school, $2,000,000.

▲ **Mass., Waltham**—SCIENCE—Brandeis University, 415 South St., science bldg. $1,000,000.

▲ **N. Y., Lake Success**—SHOPPING CENTER—Lake Success Shopping Center, c/o Peck & Shactman, 19 W. 44 St., New York, Zone 36, plans by A. H. Salkowitz, 37-60 82 St., Jackson Heights, shopping center to house Namm-Loeser Branch and other stores, on Union Turnpike between Lakeville and New Hyde Park Rds. $2,500,000. The Austin Co., 600 Fifth Ave., New Pork, Zone 20, engr.

▲ **O., Cleveland**—HOMES—Fairmount Estates Co., Albert A. Levin, pres., National City Bank Bldg., 318-home development on 175-acre site, in Beachwood Village. $15,000,000.

▲ **O., Dayton**—HOUSING—C. W. Sharp & Sons, 4200 Prescott St., 160 home proj. in area northwest of Salem Pike and Wolfe Rd., north of here. $2,240,000.

▲ **Okla., Oklahoma City**—HOSPITAL—St. Anthonys Hospital, 9 and Dewey Sts., plans by C. L. Monnott, 3020 Classen St., 200-bed addn. to existing hospital facilities. $2,500,000.

▲ **Okla., Tulsa**—OFFICE, etc.—W. W. Ahlschlager, 2505 Turtle Creek Bldg., Dallas, Tex., 8 story office and store, 6th and Cincinnati Sts. (Enterprise Bldg.). $2,000,000. Private plans.

▲ **Pa., Pittsburgh**—SHOPPING CENTER—Commodore Perry Square, 7500 W. McKnight Rd., plans by Charles Roberts, 5991 Center Ave., 1 story, bsmnt., 80x600 ft. brick, block, steel shopping center, McCandess Twp., near here. $1,000,000.

▲ **Tex., Denison**—TELEPHONE—Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, telephone bldg. for commercial and industrial storage, $1,250,000. CD 8/19/47.

▲ **Man., Winnipeg**—SHOPPING CENTER—Arle Realty Co., A & L Bldg., plans by Lloyd Finch, Leipsic Bldg., Winnipeg, Man., business and shopping center, 58-acre, $3,000,000. CD 9/1.

▲ **Man., Winnipeg**—HOTEL—Newhead Investments Ltd., c/o L. Finch, archt. 460 Main St., 4 story, bsmnt., 120x130 ft., steel hotel, Edmonton and Graham Sts., $1,000,000.

▲ **Ont., Hamilton**—BANK—Royal Bank of Canada, 360 St. James St. W., Montreal, Que., bank, 28 James St. S. $2,000,000. J. Klassen, 39 Queen St., Ottawa Ont. engr. CD 11/11.

▲ **Ont., Toronto**—APARTMENT BLOCK—Rosenberg & Smith, barristers, Bank of Nova Scotia Bldg., 7 story, 230 suite apartment block, Christie St. between Tyrrel and Benson Aves. $2,300,000.

▲ **Que., Quebec City**—INSTITUTE—Institute St. Jean Bosco, 2160 Chemin Ste Foy, plans by L. Turcotte, 37 de la Couronne St., institute bldg. at Charlebourg, near here, $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Ga., Atlanta**—PLANT—H. W. Lay Co., Inc., 1704 Portland Ave., Nashville, Tenn., food processing plant, $1,250,000.

▲ **Ill., Belvidere**—FACTORY—Sunstrand Machine Tool Co. 2531 11 St., Rockford, factory on 10-acre site, $2,500,000.

Ill., Melrose Park—FACTORY—Dowst Mfg. Co., 4537 W. Fulton St., Chicago, plans by A. Epstein & Sons, 2011 Pershing Rd., Chicago, Zone 9, 140,000 sq. ft. factory, near here. $900,000.

▲ **Mich., St. Clair**—PLANT—Michigan Iron & Coke Co., Frank J. McLaughlin, pres., St. Clair, plans by Arthur G. McKee & Co., engrs.-archts., 2300 Chester St., Cleveland, O., pig iron and coke plant, 600 acre, St. Clair River site, incl. 200x780 ft. boar slip. $35,000,000. CD 8/14/52.

▲ **Mo., Kansas City**—RESEARCH CENTER—Westinghouse Electric Corp., Union Bank Bldg., Pittsburgh, Pa., research center, $30,000,000, I. S. Towsley, 1428 S. Penn Square, Phila., Pa., consult. engr. CD 11/24.

▲ **O., Zanesville**—PLANT—American Rolling Mills Co., Middletown, plant addn. $1,000,000.

▲ **Alta., Edmonton**—PLANT—Canadian Industries Ltd., 1135 Beaver Hall Hill, Montreal, Que. polytheme plant addn. $1,000,000 CD 8/29/51.

▲ **Sask., Uranium City**—MINING DEVELOPMENT—Gunnar Gold Mines Ltd., 80 King St. W., Toronto, Ont., mining development 20 mi. from here on Lake Athabasca, mining bldgs., mile-long airstrip, garage, bunkhouses, machine shop, office open strip mining program. $14,000,000.

Briefs from the YEOMANS GUARD

A Multi-Dollar BARGAIN for Detroit's DIME BUILDING

In January, 1913, two Yeomans single Type B Bilge Pumps were installed in Detroit's Dime Building.

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From the Grand Banks off Newfoundland
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From the Gulf Mexique to South Afrique,
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With a trusty Yeomans Pump

Typical of the profit-minded businessmen who are cutting costs through engineered pumping of "unpumpable" materials are the canny fish boat owners the world over who use Yeomans Fish Pump Systems for loading fish from boat to dock—and find that the *pump installation pays for itself comfortably in less than a single season.* for instance:

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- when a Maine-coast catch of herring threatened to smother the fish and destroy nets, the Yeomans-equipped "Sea Fox" was summoned by radio-phone—and saved both catch and nets.
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More footage per blade...
LOWER COST PER CUT!

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The heavy duty
CONCRETE CUTTER
that *pushes itself!*

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★ **DOUBLE END SPINDLE** for right or left hand cutting.

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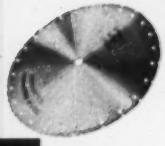

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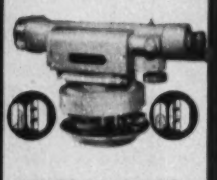

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 20 Maine
STREETS AND ROADS
January 19, 26 Massachusetts

▲† Me., Bangor—APRONS—B.A. 1/22—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., aprons, Dow Air Force Base, ENG-19-016-54-55, $1,000,000-$1,500,000. Plans deposit $10 refundable. Seelye-Stevenson-Value & Knecht, 101 Park Ave., New York, N. Y., engrs.-archts. CD 12/22.

BIDS ASKED—BUILDINGS

▲ Mass., Billerica—SCHOOL—B.A. 2/1—Town, Town Hall, brick, concrete, steel high school, River St. $2,000,000. Plans deposit $100 refundable. Charles H. Cole 2nd, 55 Waltham St., Lexington, archt. Cleverdon-Varney & Pike, 120 Tremont St., Boston, engrs. CD 3/30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Chestnut Manor, c/o Edmund Turiello, archt., 464 Park Ave., Revere, Mass. Separate Contracts. $3,000,000. RESIDENTIAL DEVELOPMENT, incl. 250 two story, bsmnt., masonry apartments, NEWTON-WEST ROXBURY, MASS. CD 1/5.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 19 Maryland & West Virginia
STREETS AND ROADS
January 20, 26 New Jersey January 26, 27 Pennsylvania

BIDS ASKED—BUILDINGS

▲ N. Y., Plainedge—SCHOOLS—B.A. 1/21—Bd. Educ., Union Free School Dist. 18, Plainedge, Northedge Grade School, east side of Stewart Ave. $1,140,000; Eastplain Elementary School, Delaware Ave. $1,160,000.

▲ N. Y., Burnt Hills—HIGH SCHOOL—B.A. 1/22—Bd. Educ., Burnt Hills, Junior-Senior High School. $1,500,000.

▲ N. Y., Freeport—HOSPITAL—Bids Asked—Doctors General Hospital, Inc., c/o Dr. John N. Shell, 155 W. Merrick Rd., 115-bed hospital, north side of Merrick Rd. between Washington St. and Bayview Ave. $1,000,000. Gloster & Gloster, 253 Sunrise Hy., Rockville Center, archts. CD 5/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Westinghouse Air Brake Co., 1943 Herman Ave., Wilmerding, Pa., LB $9,028,995, furnishing, installing signal equip. for platform exten. and 11-car train operation, Times Square to Main St., Flushing Line, IRT Div., Manhattan and Queens Boros, NEW YORK. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Dec. 18. CD 11/10.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Berger-Tilles Projects, 64 Division Ave., Levittown, N. Y. Owner Builds. $5,000,000. Great South Bay SHOPPING CENTER, 48-stores, 50-acre tract at Montauk Hy. and Brookvale Ave., BABYLON, N. Y. A. H. Salkowitz, 37-60 82 St., Jackson Heights, N. Y., archts.

▲ Psaty & Fuhrman, Inc., 369 Lexington Ave., New York 17, N. Y., LB $1,447,000, WELFARE CENTER BLDG., Jay and Johnson Sts., BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Dec. 30. CD 12/23.

▲ John T. Brady & Co., 606 W. 47 St., New York 17, N. Y. LB $2,652,000, general constr.;
Carlel-Morris, Inc., 36-52 37 St., Long Island City, N. Y., LB $333,000, plumbing;
J. W. Hubert Corp., 39-22 30 St., Long Island City, N. Y., LB $341,601, heating and ventilating;
S. A. Kahn & Co., Inc., 163-18 Jamaica Ave., Jamaica, N. Y., LB $332,000, electrical work for constr. NURSES' RESIDENCE and SCHOOL, Queens General Hospital, JAMAICA, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Dec. 16. CD 12/8.

▲ J. H. Taylor Constr. Co., 31 Union Square, New York 3, N. Y. CA Est. $1,200,000. 20 story APARTMENT, 220 Central Park South, NEW YORK, N. Y. 240 Central Park South, Inc., 31 Union Square West, New York 13, N. Y. Mayer & Whittlesey & Milton Glass, 31 Union Square West, New York 13, N. Y., archts. CD 5/22/51.

▲ Plainview Manor Homes, c/o Donald Voorhis, archt., 2097 Wantagh Ave., Wantagh, N. Y. Owner Builds. $1,400,000. 120 HOUSES, tract at Plainview and Old Bethpage Rds., PLAINVIEW, N. Y.

▲ Shelby Constr. Co., Inc., 1108 Canal St., New Orleans, La. Own Forces. $6,000,000. 10 story OFFICE, Independence Hall Mall area, 4th and Chestnut Sts., PHILA., PA.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 20 Louisiana January 22 Kentucky
STREETS AND ROADS
January 20 Louisiana January 22 Kentucky

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ FLORIDA—State Road Dpt., Tallahassee;
Wainer Constr. Co., Valdosta, Ga., LB, $1,904,166 building Myrtle Ave. Overpass in Jacksonville, Duval Co., CD 11/13;
Jarco Corp., Orlando, Fla., LB, $554,010, bridge across St. Johns River, State Rd. 520, Brevard Co., CD 11/25;
Coggin & Deermont, Chipley, Fla., LB $73,282 reconstr. underpass at Atlantic Coast Line R.R. tracks, State Rd. 10, Jefferson Co.;
Cone Brothers, Caeser and Cumberland Aves., Tampa, Fla., LB, $164,688, approaches and bridges, State Rd. 72, Sarasota Co., CD 12/10.
E. E. Collins, 2175 S.W. 32 Ave., Miami, Fla., LB, $157,616, 4 bridges, State Rd 846, Hendry Co.;
Powell Brothers, Fort Lauderdale, Fla., LB. $89,457 bridge on Roosevelt Blvd. in Key West, Monroe Co. Bids Dec. 22.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ † Brown-Neil Corp., Clarksburg, W. Va., CA $1,548,230, est. $2,662,297, constr. SPRAY BOOTH EQUIPMENT in Decontamination Bldgs. K-1420 and K-25 Area, OAK RIDGE, TENN. and X-705, PORTSMOUTH area, O. U. S. Atomic Energy Comn., P.O. Box E, Oak Ridge, Tenn. Bids Nov. 30. CD 8/13/52, under O., Piketon and Wakefield, under CA.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 20 Michigan
STREETS AND ROADS
January 20 Michigan

SOON LETS CONTRACT—BUILDINGS

▲ Ill., Bloomington—FACTORY—General Electric Corp., River Rd., Schenectady, N. Y. soon lets contract electrical equip. mfg. factory. $5,000,000. Vern Alden, 33 N. LaSalle St., Chicago, Zone 2, engr. CD 7/31.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Bryant & Detwiler Co., 2304 Penobscot Bldg., Detroit, Mich. CA $1,930,600. Contr. NE-7, 4 story, concrete, steel chemical bldg., Northeast Station, 11000 E. 8 Mile Rd., DETROIT, MICH. City, Bd. Water Comrs., 735 Randolph St., Detroit, Mich. CD 12/22, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Sam W. Emerson Co., 1836 Euclid Ave., Cleveland, O. CA. Approx. $2,350,000. 10 story brick, steel HOSPITAL addn. for patients, labs, kitchens, operating rooms, etc., CLEVELAND, O. St. Alexis' Hospital, 5163 Broadway Ave., Cleveland, O. George S. Rider Co., Terminal Tower, Cleveland, O., engr.-archt. CD 11/13/51.

▲ Affiliated Builders, Inc., c/o L. Laurence Liss, 18 E. 41 St., New York, N. Y. Own Forces. $2,500,000. 150 two-family DWELLINGS, Infirmary Rd., ELYRIA, O.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
January 21, 22 Kansas
STREETS AND ROADS
January 21, 22 Kansas January 21 Texas

BIDS ASKED—BUILDINGS

▲ Tex., Houston—CLUB—B.A. 1/26—Houston Club, Commerce Bldg., Houston Club and attached 4 story garage. $1,500,000. Wilson, Morris & Crain, 3330 Graustark St., and Russ Baty, Lamar Annex, archts.

▲ Tex., Conroe—PLANT, etc.—Bids Asked—Warren Petroleum Corp., City Natl. Bank Bldg., Houston, petrochemical plant, $3,750,000; some short length pipe lines, $85,000. CD 12/29.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Kansas City Bridge Co., 928 Broadway, Kansas City, Mo. CA $1,238,395. river spans and east approach viaduct for Missouri River Bridge, LEAVENWORTH, KAN. City, Leavenworth, Kan. Bids Dec. 15. CD 12/1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† Walter D. Giertsen, 900 Glenwood Ave., Minneapolis, Minn., CA, $2,094,000, alterations, imprvs. to BUILDINGS 1, 2, 3, 5, 6 and 7, outside electrical distr. sys. at Veterans Administration Hospital, MINNEAPOLIS, MINN. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Dec. 8, awarded Dec. 30. CD 12/11, under LB.

▲ Arthur H. Neumann & Bros. Inc., 514 Hubbell Bldg. Des Moines, Ia., Total est. $3,500,000, foundation for head house and car dumper; for 5 million bushel terminal GRAIN ELEVATOR on 30-acre of 80-acre tract near Avon Lake, near DES MOINES, IA. Farmers Grain Dealers Assn', 1101 Walnut St., Des Moines, Ia. Kenneth R. Brown, c/o Brown Eng. Co., 322 K P Bldg., Des Moines, Ia., engr. E. L. Heidenreich, Jr., Newburgh, N. Y., consult. engr. CD 9/28.

▲† W. W. Bennett Constr. Co., 3252 Roanoke Rd., Kansas City, Mo. CA $1,899,571. Park IV addnl. facility, 41 BUILDINGS, Lake City Arsenal, INDEPENDENCE, MO U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Dec. 17, awarded Dec. 22. CD 12/29, under LB.

▲ Swenson Constr. Co., 3305 Terrace St., Kansas City, Mo. LB $3,238,000, municipal AUDITORIUM underground parking facility and plaza, KANSAS CITY, MO. City, c/o Reed McKinley, dir., Dpt. P. Wks., Kansas City, Mo. Bids Dec. 22. CD 12/2.

▲ Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex., CA $2,000,000. addnl. work at Pulp and Paper MILL now under constr., EVADALE, TEX. Houston Oil Co. & Time, Inc., Petroleum Bldg., Houston Tex. (East Texas Pulp & Paper Co., parent owners, Petroleum Bldg., Houston, Tex.) H. A. Simons, Ltd., 16 E. Hastings St., Vancouver, B. C., engr.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
January 21 Nevada January 27 California

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif. and Ostrander Constr. Co., Terminal Sales Bldg., Portland, Ore., CA $18,886,007, est. $20,056,581. Phase 3, powerhouse constr. The Dalles Dam, Wasco Co., CIVENG-35-026-54-54, OREGON. U. S. Eng., Pittock Block, Portland 5, Ore. Bids Dec. 22. CD 12/24, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Blackfield Constr. Co., 145 Natoma St., San Francisco, Calif., CA, $4,000,000, sub-division of 432 HOMES in Pacific Manor, SAN MATEO, CALIF. Pacific Highlands Co., 145 Natoma St., San Francisco, Calif.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Shawinigan Engineering Co. Ltd., 600 W. Dorchester St., Montreal, Que., CA $5,000,000 design and construct power development on Upper St. Maurice River, Rapide Trenche (La Tuque P.O.) QUEBEC. Shawinigan Water & Power Co., 600 W. Dorchester St., Montreal, Que. CD 6/24.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ A. Longo & Son, 415 Lake Shore Dr., Mimico, Ont., Owner Builds, $1,600,000. 15 story, X-shaped, 160 suite, 54x60 ft., sect., 54x83 ft., concrete, brick APARTMENT BLOCK, TORONTO, ONT. Standard & Wilson, 86 Charles St. E., Toronto, Ont., archts. CD 12/4/52.

▲ R. Brissette, 4055 Madison Ave., Montreal, Que. Owner Builds, $3,500,000, HOUSING DEVELOPMENT, Cote St. Luc Rd., COTE ST. LUC (Postal District Montreal), QUE.

▲ Engineered Buildings Ltd., 1111 Angus St., Regina, Sask. Owner Builds, $1,500,000, 200 DWELLINGS at Mutana Sub-division, SASKATOON, SASK.

ALASKA

BUILDINGS

LOW BIDS AND CONTRACTS

▲† Boen & Koon, Egge & Cummins, 3647 Stone Way, Seattle 3, Wash., CA $2,215,000. HIGH SCHOOL, Proj. 50-A-50, FAIRBANKS, ALASKA. Dpt. Interior, Alaska P. Wks., Juneau, Alaska. Bids Dec. 16. CD 12/23, under LB.

(Proposal Advertisements see pp. 73 to 78)

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UNIT PRICES

Gravel base bid wins paving job for Texas contractor

Pricing natural gravel base 35% below that of the second low bidder tipped the scales for H. R. Bergstrom, Marshall, Texas, on a $115,957 street paving contract awarded by the city of Marshall. The second low bidders, Reynolds and Huff, Tyler, Texas, lost out by 2% even though their bids were lower than Bergstrom's on 19 out of 27 items.

Approximately 4,450 lineal feet will be graded, drained and finished with 1½-in compacted limestone rock and asphalt over a 6 to 8-in native gravel base. Curbs, gutters, sidewalks, driveways, and storm sewers will also be installed.

The job which began November 1 will be completed by March 1, 1954. J. E. Albright is the city engineer.

Prevailing wage rates include: bricklayers, $3.50 per hr; carpenters, $2.25 per hr; paver operators, $1.50 per hr; roller operators, $1.00 per hr; and unskilled laborers, $0.75 per hr.

Bidders include:

1C	H. R. Bergstrom Co., Marshall, Texas	$115,957
2	Reynolds & Huff, Tyler, Texas	118,783
3	Robert Yates, Marshall, Texas	148,043
EE	J. E. Albright, city engineer, Marshall Texas	133,158

Bids: 8-13-53 Items	Unit	Quantity	Unit Prices 1 C	2
Catch basins, 0'-5' deep	ea	12	$226.40	$275.00
5'-7' deep	ea	13	348.04	285.00
7'-9' deep	ea	1	454.18	285.00
Manholes, 0'-5' deep	ea	3	297.79	335.00
5'-7' deep	ea	2	386.91	345.00
7'-9' deep	ea	1	399.13	375.00
Storm sewer, 12", 0'-5' deep	lf	1,088	3.52	3.40
12", 5'-7' deep	lf	148	3.91	3.70
15", 0'-5' deep	lf	1,017	4.10	3.80
15", 5'-7' deep	lf	427	4.99	4.10
18", 0'-5' deep	lf	68	6.17	4.60
18", 7'-9' deep	lf	160	6.93	5.20
21", 0'-5' deep	lf	246	7.12	5.20
21", 5'-7' deep	lf	188	7.80	5.60
21", 7'-9' deep	lf	284	8.11	6.00
24", 0'-5' deep	lf	307	8.73	6.30
24", 5'-7' deep	lf	766	9.07	6.80
Std curb & gutter, in place 8"	lf	3,409	2.51	2.25
6"	lf	6,211	2.01	2.00
Excavation for paving	sy	19,850	0.62	0.50
Exc for conc sidewalk	sy	265	1.52	1.00
Compacted native gravel base, 8"	sy	19,302	0.71	1.10
6"	sy	548	0.68	0.95
Compacted limestone rock asph surfacing, 1½"	sy	19,902	0.91	1.25
Concrete sidewalk, 4"	sy	265	4.50	5.00
South Grove St bridge	ls	1	3,996	2,750
Bomar Street bridge	ls	1	7,682	6,250

Extremely close bidding on asphalt surfacing, Colorado

Less than 0.5% separated the first three of eleven bids on a hotly contested surfacing contract awarded by the Colorado State Highway Department, L. A. Rose, resident engineer, and J. A. Solmonson, district construction engineer.

The low bid of $198,461 by San Ore Construction Co., McPherson, Kansas, managed to beat out the second low bid by less than 0.1%.

The contract provided for 2.397 miles of stabilization and asphaltic surfacing to be completed in a three month period which started September 14. All materials were furnished by the contractor.

Skilled laborers received $2.35 to $2.51 per hr; semi-skilled, $1.75 to $2.20 and common laborers, $1.55 to $2.05. Bidders include:

1C	San Ore Const. Co., McPherson, Kansas	$198,461
2	Colorado Constructors, Inc., Denver, Colorado	198,611
11	Brown Const. Co., Pueblo, Colorado	223,339

Bids: 8-27-53 Item	Unit	Quantity	Unit Prices 1 C	2
Remove 2 structures	ls	1	$125.00	$100.00
Unclassified ditch exc	cy	20	0.65	1.00
Stripping	cy	10,000	012	0.20
Dry rock excavation	cy	5	2.00	3.00
Dry common excavation	cy	15	1.50	3.60
Wet rock excavation	cy	5	2.50	3.00
Wet common excavation	cy	5	1.50	3.00
Structural backfill #1	cy	40	1.50	3.00
Mechanical tamping	hr	10	7.50	10.00
Roll tamper—2 unit	hr	250	11.50	12.00
4 unit	hr	50	13.00	12.00
Roll flat wheel tandem	hr	280	6.00	8.00
Roll flat wheel—3 wheel	hr	350	6.00	8.00
Roll rubber tire roll	hr	120	6.00	8.00
Furnish tamper—2 unit	ea	1	250.00	150.00
4 unit	ea	1	250.00	150.00
Furnish flat wheel tandem	ea	2	100.00	100.00
Furn flat wheel—3wheel	ea	1	125.00	150.00
Furn rubber tire roll	ea	1	100.00	150.00
Wetting	mgal	4,050	1.00	1.00
Sta yd overhaul	stay	656,000	0.01	0.01
Yd mi overhaul	ydmi	381,800	0.08	0.09
Ton mi overhaul	tmi	298,700	0.07	0.08
Selected borrow	cy	59,600	0.45	0.35
Gravel surface, grade D	t	31,800	0.70	0.65
Asph 100-120 pen	t	780	27.00	26.00
Asph mat, MC prime	gal	58,500	0.15	0.15
Plant mix asph surfacing	t	13,900	3.25	3.25
18" CMP culvert	lf	55	5.00	4.00
24"	lf	82	7.00	7.00
Timber guard post	ea	74	7.00	6.00
Met apron, 18" CMP	ea	2	50.00	40.00
24"	ea	2	60.00	50.00
Shape roadbed	mi	9.4	350.00	300.00

Three-span bridge, Iowa

A 49-ft center span and two 38-ft end spans will make up a 125-ft long, 20-ft wide, concrete slab bridge constructed on a 1.5% straight grade. J. C. Costigan, Elkader, Iowa, entered the low $32,644 bid on the contract to the Iowa State Highway Commission, W. H. Blackmer, county engineer.

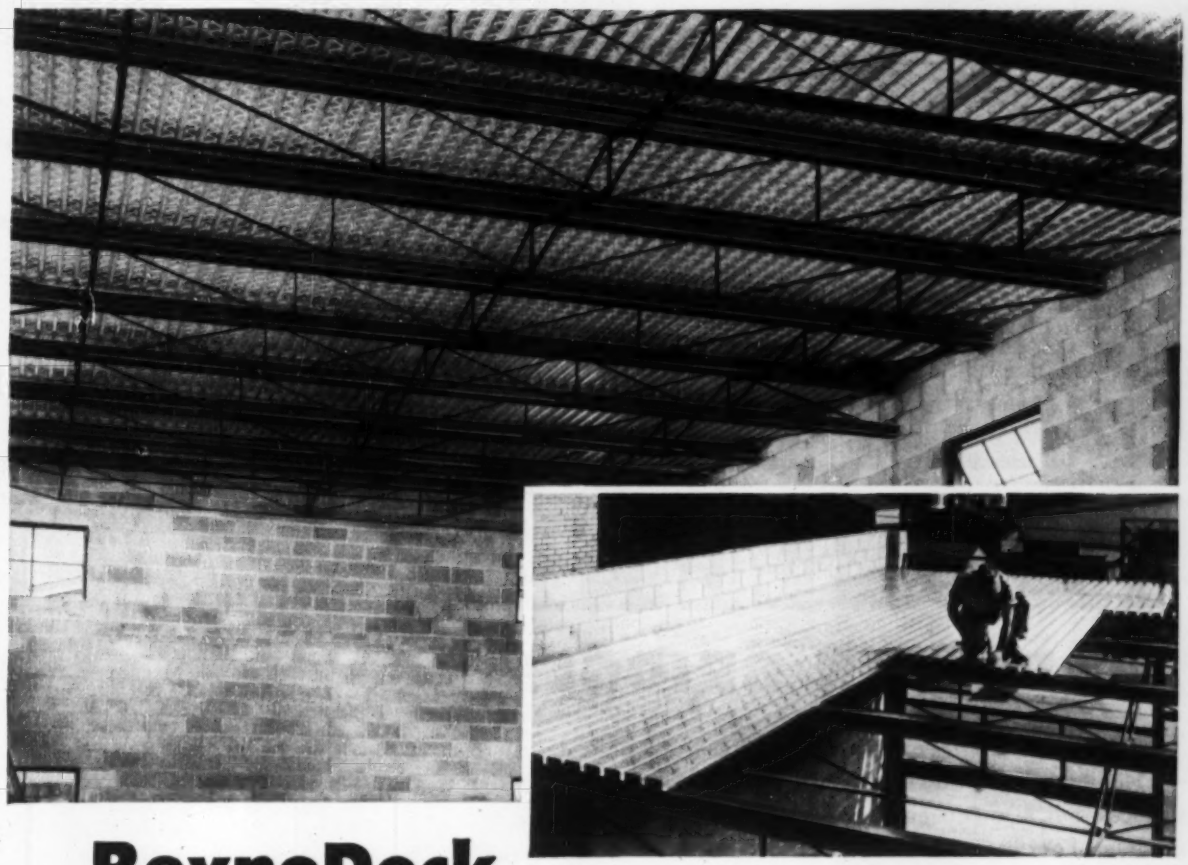
Concrete pedestal piers, 27 ft-6 in. high and 31 ft high will be used to support the bridge. The pier footings will be carried 17 ft below the stream bed into 6-in. solid rock.

The project was started August 17 and will be complete by July 3, 1954.

Bidders include:

1C	J. C. Costigan, Elkader, Iowa	$32,644
2	Torvik & Sons, Decorah, Iowa	33,282
5	W. L. Caldbeck, Des Moines, Iowa	42,545

Bids: 7-28-53 Items	Unit	Quantity	Unit Prices 1 C	2
Concrete masonry	cy	257.5	$47.00	$48.00
Reinforcing steel	lb	44,557	0.115	0.11
Structural steel	lb	9,479	0.42	0.40
Steel bearing piling	lf	736	3.90	5.00
Hardware	lb	135	0.75	1.00
Creo lumber	mfbm	5.590	305.00	350.00
Class 10 exc, channel	cy	780	0.60	0.60
Class 20 excavation	cy	143	3.00	5.00
Class 21 excavation	cy	318.3	18.00	16.00
Class 22 excavation	cy	3.8	35.00	40.00



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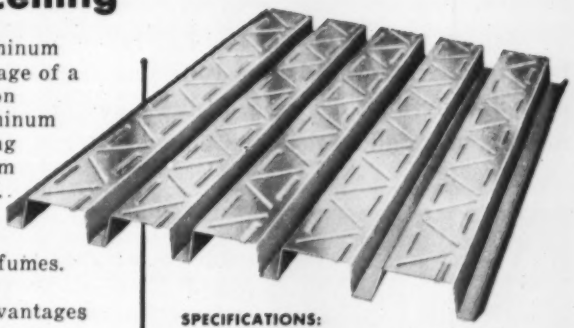

SPECIFICATIONS:

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Width: Overall 25"; nominal coverage 24" with 1 rib side lap.

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Pedestal Pads

Masonry Plate Pads

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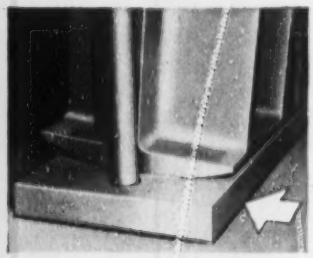

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State governments spill over

With needs for office space climbing, states are finding that offices are cheaper to build than they are to rent

State governments, faced with increasing needs for office space, are coming around to the conclusion that it's cheaper to build than to let their offices overflow into private buildings.

The mathematics of this is easy: A state or local government usually can borrow construction money more cheaply than can a private landlord. These "municipal" securities are income-tax-exempt. This means that the rentals which a private landlord must charge ordinarily would be higher than the costs a state or local government would have in putting up and operating its own buildings. In addition, of course, the landlord has to pay property taxes and make a profit. If the government is already up to its debt limit, there is a way around the difficulty. If state laws permit, a separate agency can be set up to construct the buildings and rent them to the state or local government, financing construction with revenue bonds secured by the building rentals.

There is one slight drawback here: Interest rates on revenue bonds are higher than on the state's general obligations bonds, which are secured by the state's guarantee to pay: This device of an authority, financing itself with revenue bonds, can be used for any type of public works for which the user can be made to pay.

Among states where new state office buildings are under construction, proposed, or in various stages of planning are: Colorado, Connecticut, Georgia, Kansas, Louisiana, Maryland, Massachusetts, Michigan, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Virginia, Washington, Wisconsin.

Here's a quick rundown:

• Colorado—The State Planning Commission is considering construction of about 133,000 sq ft office space.

• Connecticut—The state is acquiring land in Hartford for a new office building with 80,000 sq ft of space. A bond issue for expansion of the present state office building was authorized by the 1953 legislature.

• Georgia—The newly formed State Office Building Authority has just sold revenue certificates to finance construction of a new state agricultural office building, and a new judicial office building.

• Louisiana—A special committee is making a survey of state office needs in Baton Rouge.

• Maryland—The state has authority to finance a new $10-million office building in Baltimore and a $3-million building in Annapolis.

• Massachusetts—The Legislature probably will consider a new state office building in Boston costing up to $30 million and a $1.5-million building in Springfield.

• Michigan—The Michigan State Office Building Corp., a non-profit agency, has just opened the first of four buildings proposed in a long-range program in Lansing.

• Ohio—A State Office Housing Commission is checking into office space needs in Columbus.

• Oklahoma—The state legislature has enacted legislation to permit the governor to name a board of trustees and lease state land to this board, which could then sell revenue bonds to finance an office building.

• Oregon—The 1955 state legislature is expected to consider authorizing one or two new office buildings.

• Pennsylvania—The General State Authority has office building projects for Philadelphia, Harrisburg, and Pittsburgh, among other construction plans. Like similar agencies, the authority puts up buildings and rents them to the state, financing construction with revenue bonds secured by the building rentals. Its borrowing capacity was increased last year from $235 million to $330 million.

• Rhode Island—State officials are considering a $4-million extension to the state-owned Veterans Memorial Building in Providence.

• Virginia—The state is planning a $3.9-million building in Richmond, one of a series of new office buildings.

Survey shows stable demand for commercial buildings

Every six months, the National Association of Real Estate Boards through its membership makes a survey of the U.S. real estate market. Since these surveys give some indication of probable demand for new construction, their results make news for construction men.

NAREB's year-end survey of the market for existing office buildings and retail business structures indicates fairly stable transfer prices and a good market for the next six months. The survey does show some softening of prices, particularly in larger cities. It is based on reports from 259 communities in 44 states.

• **Office buildings**—On central city office buildings, transfer prices are about the same as six months ago in four out of five communities. However, in those cities where price changes have occurred, the trend more frequently has been down than up. Transfer prices of office buildings in outlying areas have followed a similar pattern, except that prices have declined in a few more places.

In nearly half the areas reporting, office building vacancies were running 1% or less. About 30% of the communities reported that vacancies were around 2%. Rents were about the same as six months ago in four out five cities.

• **Retail buildings**—On central city retail business property, the NAREB survey reports that in about four out of five areas, transfer prices are running at the same rate or higher than six months ago. Outlying retail business buildings in about two out of three areas are selling at the same or higher prices. In some large cities, however, there was a slower market for retail property, and prices were sometimes lower. No city with a population of a million or more reported higher prices for retail property.

Rents in retail buildings are running about the same as six months ago. About three out of five communities show vacancy rates of 1% or less, and fewer than one in 25 have a vacancy rate over 5%.

Plenty of municipal projects planned for coming months

In case any one in the construction industry needs proof of the huge volume of state and local government work scheduled for 1954, here's a preview of some big projects expected to get financing during the next few months.

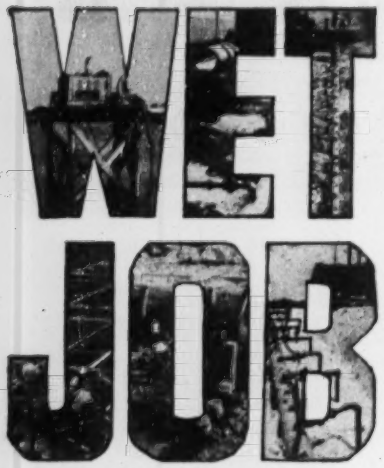
Late January: $35 million of Georgia State School Authority bonds for school construction.

$30 million of Florida State Board of Education bonds for schools.

Planned or projected for coming months:

(*Continued on page 70*)

IF IT'S A



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$315 million for the New York Power Authority.

$200 million for the Massachusetts Turnpike Authority.

$100 million for the North Carolina Toll Road.

$40 million for the Jones Beach Parkway Authority (New York).

$35 million for the Brazos River Authority (Texas).

$24 million for the Dade County (Fla.) Port Authority.

$22 million for the Jersey City (N. J.) Sewerage Authority.

$21 million for the Florida State Improvement Commission.

$20 million for the city of Philadelphia.

$19 million for the city of Toledo.

$12.5 million for the Washington State Toll Bridge Authority.

$10 million for Atlanta (Ga.) schools.

$10 million for the city of Dallas, Tex.

Business briefs . . .

• **Merritt-Chapman & Scott** has moved two steps further on its proposed acquisition of Newport Steel Corp. (ENR Dec. 10, '53, p. 145) through an exchange of stock. M C & S has reached a preliminary agreement with Wilport Co., which owns about 37% of Newport's common stock, and has filed a registration statement with the Securities & Exchange Commission covering its proposed issue of common.

• **Allis-Chalmers expands:** Allis-Chalmers Mfg. Co. is starting a long-range growth program by building a $4¼-million expansion at Terre Haute, Ind. The company will make electrical parts.

• **Arthur G. McKee & Co.,** reports that dollar volume of unfilled contracts is now 18% below a year ago.

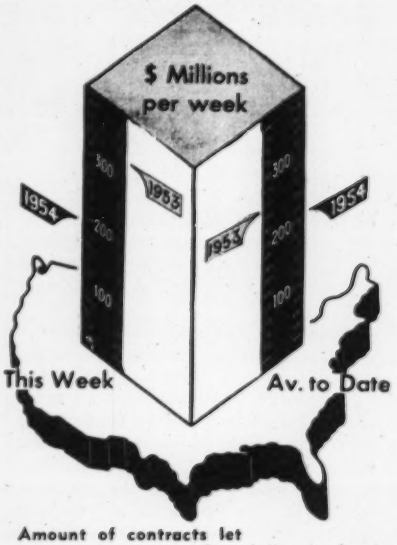
• **Half a billion for churches in 1954:** That's the estimate on church construction by the National Council of Churches of Christ in America, which says this would be a new high. About $473 million went for new church buildings in 1953.

• **Structural steel bookings** were off seasonally in November from the preceding month, says the American Institute of Steel Construction. The decline was 21% from October, but was about 5% above November 1952. Industry backlog as of Nov. 30 was 1.8 million tons, lowest since March 1951.

(Continued on page 72)

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 2 wks 1954	1953	% chge
Federal	$21.8	$33.4	$92.2	−64
State and municipal	84.3	219.7	198.4	+11
Total pub.	106.1	253.1	290.6	−13
Total priv.	89.7	168.6	218.1	−23
U. S. total	**$195.8**	**$421.7**	**$508.7**	**−17**
Contracts by type of work				
Waterworks	$2.3	$10.0	$8.4	+19
Sewerage	1.4	8.4	11.4	−26
Bridges	15.5	22.4	18.4	−31
Highways	21.8	81.6	54.9	+66
Earthwork, waterways	20.8	24.9	30.8	−19
Buildings:				
Public, excl. hsg.	32.2	82.9	78.5	+6
Housg., pub.	8.0	10.5	41.0	+74
Housg., priv.	56.0	90.4	113.9	−21
Commercial	20.6	39.3	31.3	+26
Industrial	10.7	33.0	50.6	−35
Unclassified	6.5	18.3	69.5	−74
Total	**$195.8**	**$421.7**	**$508.7**	**−17**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction
(millions of dollars)

	Week of Jan. 7 1954	Cumulative 1 Wk. 1954	% chge 1953-54
Corporate securities	$51.9	$51.9	+50
State and municipal:			
Excluding housing	16.4	16.4	−31
Housing	0.9	0.9	−25
Federal loans	3.1	3.1	−9
Federal aid	...	...	...
Total non-federal	**$72.4**	**$72.4**	**+148**
Federal approp.:			
In U. S.	...	...	...
Outside U. S.	...	...	...
Total new capital	**$72.4**	**$72.4**	**+148**

ENR indexes		Base years = 100 1913	1926	1949
Constr. cost	Jan '54	614.04	295.17	128.72
	Dec '53	611.48	288.45	128.19
Bldg. cost	Jan '54	436.88	236.16	124.19
	Dec '53	435.90	235.63	123.91
Volume	Dec '53	547	222	158
	Nov '53	354	144	102

Holes loaded and ready to shoot.

Peak of blast. Confinement is good.

Spent gases appear—air blast avoided.

Well placed final pile. Throw controlled.

the inside story

Here's how ROCKMASTER blasting helps control throw

6 5 4 3 2 1
6 5 4 3 2 1
6 5 4 3 2 1

THE LONGER LOOK:

Though business will slow down a little in 1954, spending plans are high. That means a boom year for construction.

Business is falling off as the new year begins. But the indications are that it is a case of slowing down from superboom to boom, not from superboom to recession.

Industrial production, as measured by the new Federal Reserve Board index, has been declining slightly every month since July. By the end of the year FRB's index was off 7% from the peak. Industrial employment failed to develop its normal seasonal rise last fall. Unemployment rose in November and December, although the rise was due mostly to seasonal layoffs of farm labor. Other important economic indicators, including housing starts, have also been falling recently (ENR Dec. 17, '53, p. 69).

But the three basic generators of economic activity—consumer spending, business capital spending, and government spending—probably will be operating in high gear, close to their 1953 levels. And the Administration, in President Eisenhower's phrase, intends to use "every proper means" to sustain prosperity.

• **Consumer spending**—Consumers apparently will keep on spending at a high rate. A recent survey conducted by the University of Michigan Survey Research Center—one of a series—shows a sharp gain in the percentages of consumers in various income groups who think now is a good time to buy major household items. (However, the percentage of families who think now is a bad time to buy these "big ticket" items has also increased slightly in some income brackets.) Consumers may buy fewer cars and major appliances in 1954. But auto manufacturers are still planning to keep up production at the 1953 rate of 6 million cars for at least the first six months.

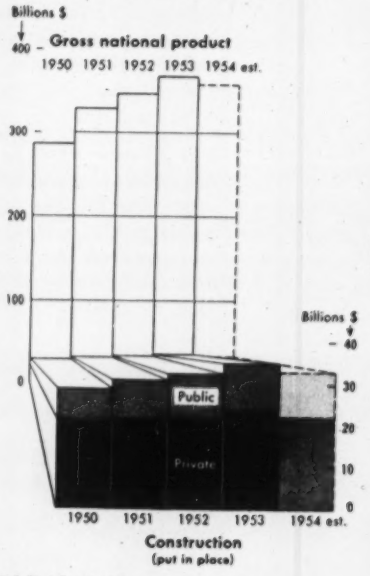
Personal income will be lower in 1954, but it probably won't drop much more than 1% for the year as a whole. Some of the decline will be offset by the cut in personal income taxes which took effect Jan. 1. That gives consumers $3 billion more to spend in 1954 than they would have had otherwise. Consumers should have enough money to back their spending intentions.

• **Business spending**—Business plans indicate that capital spending will be only about 4% below 1953's all-time record. Manufacturing industries intend to spend 8% less on new plant and equipment, according to a survey by the McGraw-Hill Department of Economics. Spending by the transportation industry will also be lower. But utilities plan to maintain their 1953 rate of capital spending, and commercial trades and services are projecting hefty increases.

That's why the Department of Commerce expects a decline of only about 2% in dollar value of construction put in place this year from the record levels of 1953. There will be some shifts within the construction industry, as industrial building declines while commercial building and highway construction increases. New housing starts will be under 1953's 1.1 million, but Administration policy apparently will be to underwrite about a million starts in 1954. People will spend more on repairing and altering their homes, offsetting some of the reduction in new units.

• **Government spending**—The story is much the same with government spending. It will be about at the 1953 level. Federal spending should run around $67 billion for the fiscal year 1955, about $5 billion below the year ending June, 1954. However, the drop in spending will be offset by reductions in personal income tax payments and by expiration of the excess profits tax. Also, state and local governments will spend more in 1954.

Construction and business activity—both down a little in 1954



U.S. Dept Commerce data
Estimates by McGraw-Hill Dept of Economics

This forecast for the year 1954 as a year of prosperity only a little below the record business activity of 1953 assumes no major change in the political and international climate. Business now shows every sign of accepting a small decline without getting panicky. There is no loss of confidence that would lead to a cutback of the investment plans which now contribute heavily to the favorable business outlook.

Depreciation speedup: How much do we need?

The Administration has taken the wraps off its program to encourage investment in new plant and equipment by liberalizing tax rules on depreciation (ENR Jan. 7, p. 19).

It will propose a relatively conservative application of the so-called "declining balance" method of depreciation. This is designed to allow business to write off two-thirds of the cost of building a plant in at least half of the life of the property. There's some talk, however, of letting business write off half the cost in a flat five years.

• **Not much**—Charging off two-thirds in half the useful life doesn't give the businessman much advantage over the normal depreciation allowance he has today. On a $1-million plant with a life of 20 years, for instance, in 10 years he would be able to accumulate only $667,000 out of pre-tax earnings to replace the plant, compared with the $500,000 he can charge off under present rules. Under the fast-amortization program for defense plants, that has been set up since Korea, about $30 billion of plant and equipment has had the advantage of a 60% writeoff in five years.

The question then becomes: Is this really enough of a business stimulant to make any real difference?

The White House officials who are behind the change believe that a small assist is all the economy needs right now. They point out that the rate of capital spending has been very high during 1953, and that Department of Commerce estimates for the first quarter of this year are still high. And they note that this is happening without any new amortization policies at all.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $1.50 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record, 330 West 42nd Street, New York 36, N. Y.

Bids: January 21, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 21st day of January 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y.				
Greene	FARC 54-1	Shandaken-Lexington Pt. 2, SH1774-A Project F-992(4)	0.82	Asp. Conc. Ty. 1A, Opt.=0.78 Mi. Misc. Work=0.04 Mi.	$5,500 Plans $10	$101,000
		DISTRICT No. 4				
		E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y.			$11,000 Plans $10	200,000
Livingston	F.A.S.S. 54-2	Pine Tavern Corners—Route 36 (Co. Rd.) Proj. S-394(1)	2.26	Bit. Mac. Ty. 1-A		
Monroe	FA.C. 54-1	Rochester City: Innerloop (Front St. to Main St. West) F.A.C. 52-12 Proj. U-1089(3) Cont. 2	0.15	Traffic Signal System	$900 Plans $10	16,000
		DISTRICT No. 5				
		C. R. Waters, District Engineer, 65 Court Street, Buffalo, New York.				
Erie	G.I.S.P. 54-1	Grand Island: West River Parkway (East Service Road)	7.36	Surface Treatment=3.52 Mi. Asp. Conc. Ty. 1A, Opt.=3.64 Mi. Misc. Work=0.20 Mi.	$2,100 Plans $10	38,000
		DISTRICT No. 8				
		J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.			$450 Plans $10	8,000
Columbia	T.S.P. 54-1	Taconic State Parkway (Relocated C. R. 12)	1.48	Improvement of Drainage Facilities		
Dutchess	B.A. 54-1	Kingston-Rhinecliff Bridge: East Approach Cont. 7	1.34	Grading and Drainage	$30,000 Plans $15	549,000
		DISTRICT No. 10				
		M. E. Goul, District Engineer, Montauk Highway, Babylon, L. I., New York				
Nassau and Suffolk	N.S.P. 54-1 C.A.P. SP54-1 S.A.G. SP54-1	Northern State Parkway Sagtikos State Parkway Captree State Parkway	24.77	Drainage, Planting and Fencing	$12,000 Plans $10	233,000
Suffolk	D.A. 54-1	Wading River-Manor Road & Swan Pond Road (Town Roads Access to Peconic River Plant) Proj. AD-5(2)	3.16	Asp. Conc. Ty. 1-A, Opt:	$18,000 Plans $15	330,000
		DISTRICT No. 1 G. L. Nickerson, District Engineer, 353 Broadway, Albany, N. Y. DISTRICT No. 2 L. Ketchum, District Engineer, 109 No. Genesee Street, Utica, N. Y. DISTRICT No. 3 William Robinson, District Engineer, 301 E. Water Street Syracuse, N. Y: DISTRICT No. 4 E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y: DISTRICT No. 5 C. R. Waters, District Engineer, 65 Court Street, Buffalo, N. Y. DISTRICT No. 8 J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y:				
Albany Greene Schen., Herk., Mad., Mont., Oneida, Cay. Onon., Seneca, Gen., Monroe, Ont., Erie, Oran., Rock., Ulster, West.	T.U.B. 54-1E	New York State Thruway—Hudson, Catskill, Mohawk and Ontario Sections (Electrical Work at Toll Plazas)	....	Furnishing and Installing Electrical Facilities at 40 Toll Plazas	$43,000 Plans $25	775,000

Note: Plans and proposals for T.U.B. 54-1E may be procured only at our Albany and New York City offices.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

INSURE COMPETITION

and get the lowest possible bid for your proposed work by placing your bids wanted advertising in this Section.

Don't limit competition to local bidding alone. Bring it to the attention of contractors the country over. They read this Section every week—make sure your bid is here where they can read it.

OFFICIAL PROPOSALS

Bids: January 26, 1954

Route 29-A (1927) Route 29 (1953), Section 5-A

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

Route 29-A (1927) Route 29 (1953), Section 5-A, from Raven Rock to one mile North of Byram; Partial Grading, Delaware and Kingwood Townships, Hunterdon County. Length 1.593 miles. The principal items of work are:

Estimated:
15,168 cu. yds. Roadway Excavation-Earth
114,012 cu. yds. Roadway Excavation-Rock
15,000 cu. yds. Borrow Excavation
800 lin. ft. Rein. Conc. Pipe, various sizes

Bids for the above wil be received at the office of the State Highway Department, Assembly Room, Room 149, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, January 26, 1954, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Ave., Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: January 26, 1954

Route U. S. 202 (1953), Section 1-A

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

Route U.S. 202 (1953), Section 1A, from Route 10 to Route U.S. 46 (1953); Grading and Bridges, Hanover and Parsippany-Troy Hills Townships, Morris County. Length 2.760 miles. The principal items of work are:

Roadway Items

Estimated:
180,291 cu. yds. Roadway Excavation-Earth
22,621 cu. yds. Wet Excavation
206,533 cu. yds. Borrow Excavation
8,540 lin. ft. Rein. Conc. Pipe, various sizes
1,013 lin. ft. C. I. Culvert Pipe, various sizes
80 Inlets

Bridge Items

3,324 cu. yds. Foundation Excavation
5,601 cu. yds. Concrete in Structures
240,960 lbs. Reinforcement Steel in Structures
523,500 lbs. Structural Steel
1,984 lin. ft. Timber Piles

Bids for the above wil be received at the office of the State Highway Department, Assembly Room, Room 140, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J., on Tuesday, January 26, 1954, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Ave., Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed:
STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: January 28, 1954

Steel Fabrication for Beam Span Bridges

MAINE TURNPIKE AUTHORITY
MAINE TURNPIKE
Section 2—Portland to Augusta
(Augusta Extension)

Sealed Proposals will be received by the Maine Turnpike Authority for: CONTRACT NOS. 207, 207A, 207B and 207C at the offices of the Authority, 17 Bishop Street, Portland, Maine until 10:00 A.M., Eastern Standard Time, on January 28, 1954 at which time and place the Proposals will be publicly opened and read.

The work will be let either (a) under a single contract, Contract No. 207, for the entire Work, consisting of the fabrication of superstructure steelwork for approximately eighty-seven bridges or (b) under three separate contracts, Contract Nos. 207A, 207B and 207C, consisting of the fabrication of superstructure steelwork for approximately seventeen, eleven, and fifty-nine bridges respectively.

The principal items of work for Contract Nos. 207A, 207B and 207C include the following:

	Contract No.		
	207A	207B	207C
Structural Steel, lbs.	3,340,000	13,400,000	12,290,000
Bearing Devices and Anchor Bolts, lbs.	140,000	292,000	430,000

The principal items of Work for Contract No. 207 equal the sum of the quantities listed for Contract Nos. 207A, 207B and 207C.

A Bidder submitting a Proposal for Contract No. 207 must also submit Proposals for Contract Nos. 207A, 207B and 207C.

Contract documents may be examined by prospective bidders during regular office hours at the offices of the Authority at the above address and at the offices of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y., and may be obtained upon payment of Twenty Dollars ($20.00) for each set which will not be refunded. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Each proposal must be accompanied by a certified or cashier's check payable to the Maine Turnpike Authority in an amount not less than five per cent (5%) of the Total Amount of the Proposal but not less than $500.00 nor more than $200,000.00 and must be delivered at the Authority's office on or before the day and hour named above for receipt of Proposals.

Proposals must be made upon the Proposal forms furnished separately by the Authority with the contract documents and must be enclosed in the sealed special addressed envelopes provided therefor bearing the name and address of the bidder and the number of the Contract on the outside.

Before the award of the Contract, any bidder may be required to show that he has the necessary facilities, experience, ability and financial resources to perform the work within the time required and to the satisfaction of the Authority.

The Bidder, to whom a Contract is awarded, will be required to furnish a Surety Corporation Bond, satisfactory to the Authority, on the standard Contract Bond form of the Authority, for a sum not less than the Total Amount of the Proposal.

The Authority reserves the unqualified right to reject all Proposals or to accept that Proposal which in its sole judgment will under all circumstances serve its best interests. The Contract will be awarded or Proposals rejected within thirty days after the date of opening Proposals, except that in the event of default by a successful bidder the Authority reserves the right to accept the Proposal of any other bidder within twenty days after such default.

MAINE TURNPIKE AUTHORITY
Joseph T. Sayward, Chairman

Bids: January 28, 1954

Steel Fabrication for Androscoggin River Bridge

MAINE TURNPIKE AUTHORITY
MAINE TURNPIKE
Section 2—Portland to Augusta
(Augusta Extension)

Sealed Proposals will be received by the Maine Turnpike Authority for:
CONTRACT NO. 208
at the offices of the Authority, 17 Bishop Street, Portland, Maine until 10:00 A.M., Eastern Standard Time, on January 28, 1954 at which time and place the Proposals will be publicly opened and read.

The principal items of work will include the following:

Structural Steel .....3,620,000 lbs.
Bearing Devices and Anchor Bolts ..... 62,000 lbs.

Contract documents may be examined by prospective bidders during regular office hours at the offices of the Authority at the above address and at the offices of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y., and may be obtained upon Payment of Ten Dollars ($10.00) for each set which will not be refunded. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Each proposal must be accompanied by a certified or cashier's check payable to the Maine Turnpike Authority in an amount not less than five per cent (5%) of the Total Amount of the Proposal but not less than $500.00 nor more than $200,000.00 and must be delivered at the Authority's office on or before the day and hour named above for receipt of Proposals.

Proposals must be made upon the Proposal forms furnished separately by the Authority with the contract documents and must be enclosed in the sealed special addressed envelopes provided therefor bearing the name and address of the bidder and the number of the Contract on the outside.

Before the award of the Contract, any bidder may be required to show that he has the necessary facilities, experience, ability and financial resources to perform the work within the time required and to the satisfaction of the Authority.

The Bidder, to whom a Contract is awarded, will be required to furnish a Surety Corporation Bond, satisfactory to the Authority, on the standard Contract Bond form of the Authority, for a sum not less than the Total Amount of the Proposal.

The Authority reserves the unqualified right to reject all Proposals or to accept that Proposal which in its sole judgment will under all circumstances serve its best interests. The Contract will be awarded or Proposals rejected within thirty days after the date of opening Proposals, except that in the event of default by a successful bidder the Authority reserves the right to accept the Proposal of any other bidder within twenty days after such default.

MAINE TURNPIKE AUTHORITY
Joseph T. Sayward, Chairman

OFFICIAL PROPOSALS

Bids: January 28, 1954

Electric Driven Stages and Muckets George Washington Bridge

THE PORT OF NEW YORK AUTHORITY
PROPOSAL NO. 342

Sealed proposals for furnishing eight (8) electric driven stages and sixteen (16) muckets for use with above equipment for delivery to the George Washington Bridge, Emergency Garage, Fort Washington Avenue and 178th Street, New York City, will be received at the office of the Director of Purchase of The Port of New York Authority, Room 900, 111 8th Ave., New York 11, until 11:00 A. M. (E.S.T.) on Thursday, January 28, 1954, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: April 8, 1954

Dam Projects Equipment

TENDERS SOUGHT FOR

Tenders in envelopes endorsed "High Pressure Gates" and addressed to the Secretary, Water Conservation and Irrigation Commission, Box 2708 G.P.O., Sydney, N.S.W., Australia, will be received up to 10.30 a.m. Thursday 8th April, 1954, for the design, manufacture, supply and delivery of high pressure gates, valves, conduits and accessories for Keepit and Glenbawn Dams. Delivery F.O.R. Darling Harbour, Sydney, N.S.W., or alternatively Free on boat at port nominated by tenderer. Plans and specifications may be purchased for 5 shillings at the Commission's Head Office, Farrar Place, Sydney, Australia, or may be inspected, together with tender forms, at the offices of the Agent-General, London, England, and the Australian Embassy Chancery, 1700 Massachusetts Avenue, Washington, D.C.

U. S. Government

PANAMA CANAL COMPANY, 24 STATE STREET, NEW YORK 4, N. Y. Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until 10:00 AM E.S.T., January 27, 1954 at which time they will be formally opened, for preparation of site, clearing and grubbing, excavation, demolition, fills, backfills; installation of sanitary and storm sewers including structures, service lines and house connections, electrical distribution service conduits and conductors; construction of street pavements, curbs, and gutters, driveway and walk; construction of 63 houses complete. Project to be completed 300 calendar days after award. Plans and specifications may be obtained from Panama Canal Company, 24 State St., New York 4, N. Y. Requests should be accompanied by a $40.00 deposit for each set. Deposit should be made payable to "Treasurer, Panama Canal Company." Plans and specifications may be inspected at the following places: Panama Canal Company, 101 Indiana Ave., N. W. Washington 25, D. C.; Panama Canal Company, 24 State Street, New York 4, N. Y.; Office of the District Engineer, U. S. Engineer's Office, 1709 Jackson Street, Omaha 2, Nebraska; Office of the District Engineer, U. S. Engineer's Office, 180 New Montgomery Street, San Francisco 19, California; Office of the District Engineer, U. S. Engineer's Office, P. O. Box 1538, Albuquerque, New Mexico; Office of the District Engineer, U. S. Engineer's Office, 751 S. Figueroa Street, Los Angeles, California; Office of the Division Engineer, U. S. Engineer's Office, Southwestern Division, 1114 Commerce Street, Dallas, Texas; Office of the District Engineer, U. S. Engineer's Office, 4735 Marginal Way, Seattle 4, Washington; Office of the District Engineer, U. S. Engineer's Office, Foot of Prytania Street, New Orleans, Louisiana.

Bids: February 11, 1954

Suspended Structure and Decks on Anchorages Contract No. 6

DELAWARE RIVER PORT AUTHORITY
Administration Building
Camden, New Jersey

Sealed bids will be received for the construction of Suspended Structure and Decks on Anchorages for a Suspension Bridge over the Delaware River connecting Packer Avenue, in Philadelphia, Pennsylvania and Gloucester City, New Jersey, known as Contract No. 6, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 1:30 P. M. Eastern Standard Time, February 11, 1954 at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

The Bid must be accompanied by a certified check in the sum of Three Hundred and Fifty Thousand Dollars ($350,000.00) payable to the order of the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
Joseph K. Costello
Executive Director

Bids: February 9, 1954

Construction of Service Building

THE PORT OF NEW YORK AUTHORITY
HOLLAND TUNNEL
NEW JERSEY PLAZA
SERVICE BUILDING NO. 2
CONTRACT HT-150.001

Sealed proposals for the construction of Service Building No. 2 at the New Jersey Plaza of the Holland Tunnel, Jersey City, New Jersey will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1111, 111 Eighth Avenue, New York 11, N. Y. until 2:30 P.M., Tuesday, February 9, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1111, and copies will be furnished upon deposit of $50.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF
NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: February 17, 1954

Additions to Sewage Treatment Plant

NOTICE TO BIDDERS
FOR THE
TOWNSHIPS OF
HAVERFORD, RADNOR, AND MARPLE
DELAWARE COUNTY, PENNSYLVANIA

Sealed bids in opaque envelopes for the construction of additions to the Sewage Treatment Plant will be received by the Boards of Commissioners of Haverford and Radnor Townships and the Board of Supervisors of Marple Township at a joint meeting in the Commissioners Meeting Room in the Haverford Administration Building, 2325 Darby Road, Haverford (Havertown P. O.), Delaware County, Pennsylvania, until eight (8) o'clock P. M., Eastern Standard Time, Wednesday, February 17, 1954, and then at said place, publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, and Form of Performance Bond may be examined at the office of either of the Townships, whose addresses are as follows: The Haverford Administration Building, 2325 Darby Road, Havertown P. O., Pennsylvania; The Radnor Township Building, 212 E. Lancaster Avenue, Wayne, Pennsylvania; and The Marple Township Building, Springfield and Sproul Roads, Broomall, Pennsylvania; or, at the Consulting Engineer's office. Copies thereof may be obtained at either place upon payment of Twenty-five ($25.00) Dollars for each set of construction plans and specifications. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment and any non-bidder upon so returning such set within ten (10) days after the date for the receipt of bids, will be refunded only one-half of his deposit. Checks given as deposit on plans and specifications shall be made payable to Radnor Township.

In general, the work included under the Construction Contract consists of alterations and additions to the existing Sewage Treatment Plant to increase its rated capacity from 1.2 M.G.D. to 3.6 M.G.D. The Electrical Contract includes wiring and devices necessary for the new facilities. The principal items of new construction include a screen, flume meter, grit chamber, two primary settling tanks, two high-rate filters, two final settling tanks, a floating cover digestion tank, a gas holder, a glass covered sludge drying bed, two new sewage pumps, recirculation pumps and chamber, sludge pumps, and chamber, metering apparatus, piping, roadways, and miscellaneous other work, all as required to provide a complete plant ready for operation.

Each bidder must deposit with his bid, an amount of not less than Five (5%) percent of his total bid in the form of a certified check or bank check payable to Radnor Township, subject to the conditions provided in the Information for Bidders. In addition, a Consent of Surety, signed by an acceptable Corporate Surety Company, shall be executed in the form accompanying the bid.

The Townships reserve the right to reject any or all bids, waive any informalities, or to accept that bid, acceptance of which will, in the judgment of the Boards of Commissioners and Supervisors, best secure the public interest and efficient work. The Townships further reserve the right to eliminate certain items of work if they deem it to their best interest to do so.

No bidder may withdraw his bid within Forty-five (45) days after the date of opening thereof.

H. A. FRITSCHMAN
Secretary, Haverford Township
R. W. BARRINGER
Secretary, Radnor Township
R. T. NICHOL
Manager, Marple Township
WILLIAM RAISCH
Consulting Engineer
53 Park Avenue
Garden City, L. I.
New York
Dated: January 7, 1954.

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P-1126, Engineering News-Record
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P-1293, Engineering News-Record
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SW-1250, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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SAN FRANCISCO: 68 Post St. (4)

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WANTED RECENT civil or mechanical engineering graduate. General field of municipal water supply. Permanent position with annual increase in salary and bonus. Profit sharing Plan. Frequent change in location necessary. P-1152, Engineering News-Record.

WANTED—SEMI-retired engineer for quantity take-off—some design. Near beautiful resort area North Atlantic States. Seasonal. Write fully. P-1258, Engineering News-Record.

ENGINEER ESTIMATOR to handle all phases of supervision, layout, etc. in Water Lines, Sewers, Tunnels structure and heavy Excavating. Must have wide experience with references for location in Ohio. Excellent salary, may have option to buy into corporation. State age and availability. P-1286, Engineering News-Record.

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CIVIL ENGINEER, graduate. Eleven years experience in construction supervision, cost estimating, planning, reconnaissance and location surveys, design, and coordination of roads, railroads, industrial buildings, power distribution stations, airfields, and small communities in the U.S.A., Europe, and Japan. PW-1253, Engineering News-Record.

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W-1175, Engineering News-Record
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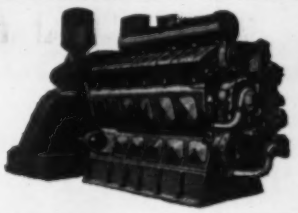

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1100	General Motors	16-278A	1600	720	200	General Motors	8-268A	350	900
750	General Motors	12-567	1080	720	150	Worthington	CC-4	225	450
500	Baldwin	VO-8	750	514	150	Ingersoll-Rand	8-4	225	600
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500	General Motors	8-567	720	720	100	Worthington	BB-5	150	600
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Aberthaw Company	79
Air Compressor Rental Co	77
Albert Pipe Supply Co., Inc	78
Ambursen Dam Co., Inc	78
American Air Compressor Corp	80
Boyer, R. H	79
Buff	81
Clark-Aiken Co.	78
Consolidated Engineering Co	77
Contractors Machinery Co	79-80
Contractors Trading & Equipment Corp.	78
Deatherage & Son, George E	76
Dormer, E. J	77
Drachman Steel Co., Inc., Hy	80
Duffy Construction Corp	79
Forsythe Equipment Co., Inc	79
Frank, M. K	78
Frazier-Davis Construction Co	78-80
Gillis & Co	78
Glazer-Steel Corp.	77
Greenpoint Iron & Pipe Co	78
Greensburg Machine Co	79
Hercules Hose & Rubber Co	80
Hickerson, Roy D	81
Howard, Needles, Tammen & Bergendoff	76
Hunkin-Conkey Constr. Co	80
Judge & Co., Inc., Frank	79
Lichtenberg, Samuel	76
McCarrick Brothers Inc	79
McDonald, J. C	80
Midwest Steel Corp	78
Mississippi Valley Equipment Co	79-80
Morrison Railway Supply Co	78
National Blue Print Co	81
Schoonmaker Co., Inc., A. G	79
Southeastern Elec. Constr. Co	80
Southern Gateway Co	76
Stanhope, Inc., R. C	80
Tagco Inc.	78
United Foundation Corp	80
Warren-Knight Co.	81
Weiss Co., B. M	79
Williams Construction Co	78
Wilson Engineering Co	76

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Apsco's new formless paver-finisher has been designed to spread, level and tamp hot or cold bituminous mix in one operation. And in an attempt to provide the industry with a faster, smoother-working machine, the company has mounted the new unit on rubber.

Whether used on hard surfaces with tack coat or on soft, spongy sub-grade, it is said that the rubber-tired PF-90 has ample traction for pushing heavy dump trucks. Further, backtracking is said to be faster, and time-consuming detours around newly paved areas are eliminated since the self-propelled machine can be driven over them without causing damage.

The new traction design is also responsible in part for a claim of reduced overhaul and maintenance costs. Smoother starting and stopping are said to be effected with the drive transferred through a differential with attached sprockets fastened to the four rubber-cushioned driving wheels. The end result is reported to be less wear and tear on pins, bushings, etc.

Long wheel base and a floating type screed are also said to cut costs by reducing the number of passes necessary to get a good level job of paving. The screed itself is heated by an electrically started blower-type heater that can be started instantaneously by a pushbutton located near the operator. Rag soaking and burning prior to operation are thus eliminated.

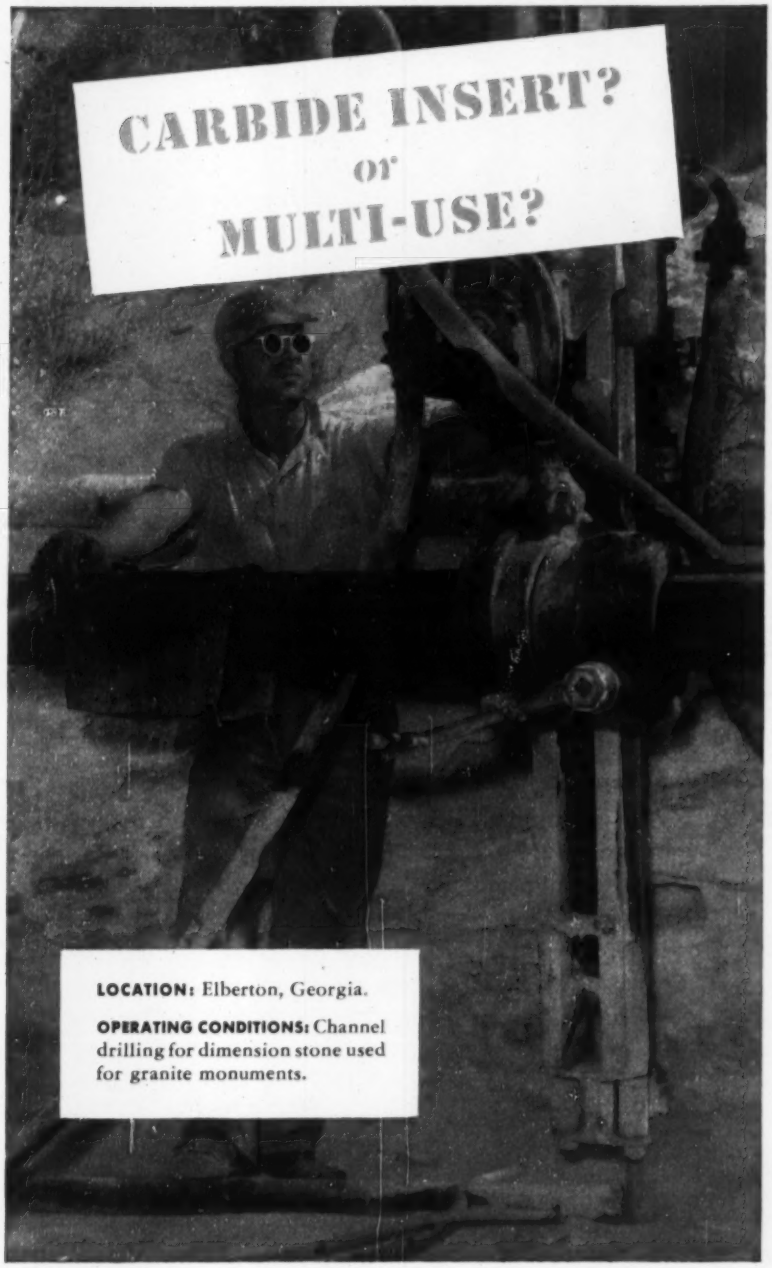
To aid in changing over between jobs requiring heavier and lighter layers of mix the two cross augers may be adjusted vertically. Then too these hydraulically raised and lowered augers are another means of preventing separation of material, and raising the augers expedites loading and unloading from the carrier. Spreading depth may be varied from 0 to 10 in.

Standard width range for the Model PF-90 is from 8 to 13 ft, and, it is said, changing the width of the paving takes approximately 15 min. The three operations necessary to complete the changeover are: slide out end of hopper; insert auger extension into recessed end of existing auger and lock with a pin; insert tapered ends of tamper and screed extensions into tapered socket couplings of the screed and tamping bar—each extension is locked in place using three bolts.

The hopper has been built with low clearance and large capacity. The first feature makes it easy for dump trucks to unload while the high side design prevents spillage from high trucks. Large, 4-cu yd, capacity of the loading hopper releases trucks faster yet glutting or overbalancing of the feed is prevented by dual

(*Continued on page 87*)

Harmony Blue Granite Company increases drilling speed 50% with TIMKEN® carbide insert bits!



HARMONY Blue Granite Company increased drilling speed 50%, cut drill steel requirements and attained maximum production by switching to Timken® carbide insert bits.

Ideal for high speed drilling through hard and abrasive ground, Timken carbide insert bits have also proved most economical for constant-gage holes, small diameter blast holes and very deep holes.

Yet carbide insert bits aren't best for *every* job!

For ordinary ground, for instance, Timken multi-use bits are most economical. With correct and controlled reconditioning, they'll give you the lowest cost per foot of hole when full increments of steel can be drilled.

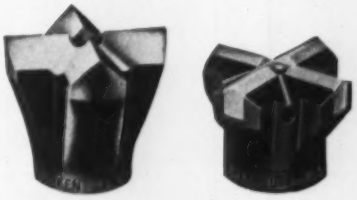
Both Timken bit types—multi-use and carbide insert—have these advantages: quickly and easily changed; special shoulder unions which protect threads from drilling impact, and made from electric furnace Timken fine alloy steel. What's more, many sizes of Timken carbide insert and multi-use bits fit the same steel!

Want to make sure you're using the best type bit for the job? Call on the Timken Rock Bit Engineering Service. Our address: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

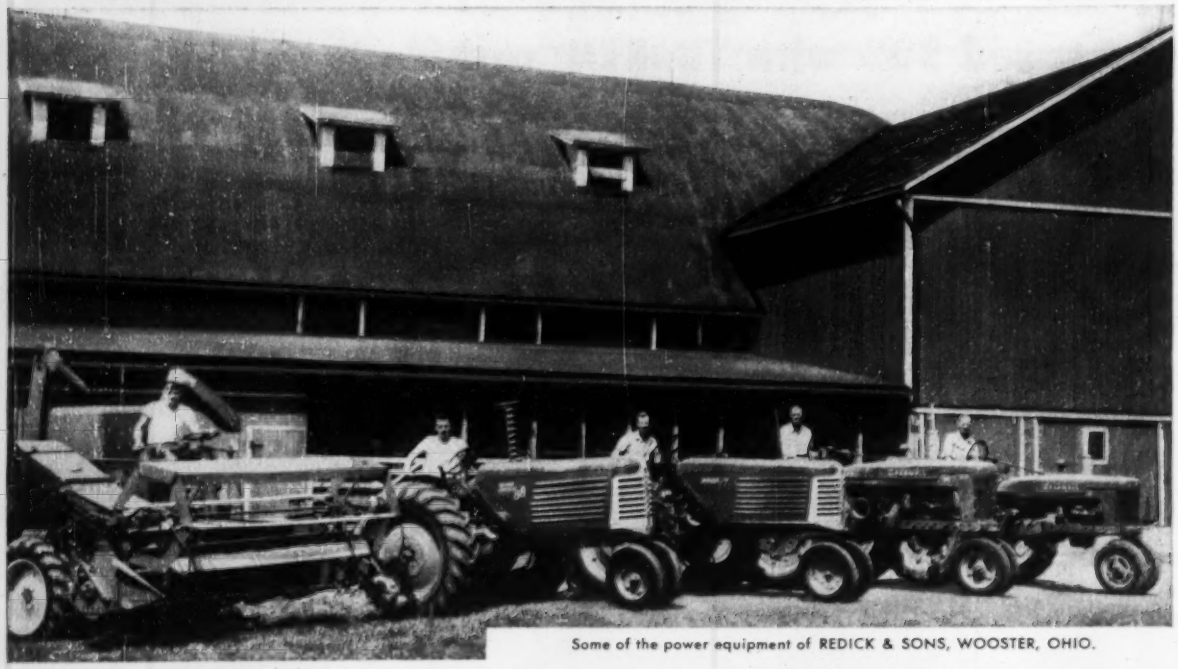
your best bet for the best bit...for every job



Timken threaded multi-use rock bit

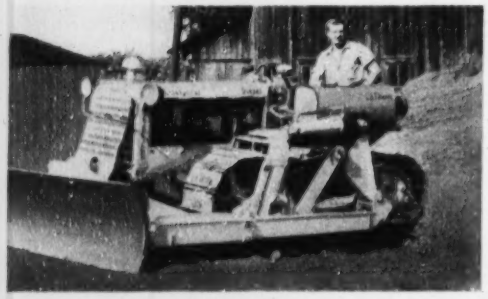
Timken threaded carbide insert rock bit

A STORY FOR EVERY MAN WITH ROLLING STOCK



Some of the power equipment of REDICK & SONS, WOOSTER, OHIO.

SIX TROUBLE-FREE YEARS WITH CITIES SERVICE C-300 OIL!



FOR THE MAN WHO GROWS FOOD. For their trucks, cars, tractors and other power equipment, including diesel above, the Redicks use only Cities Service C-300 Motor Oil.

FOR THE MAN WHO TRANSPORTS FOOD. Albert Herda, trucker extraordinary, uses Cities Service C-300 Motor Oil in year 'round operation between Minnesota and Alaska!

You may say, "What's a farm story doing in this magazine?"... and it's a good question Mr. Fleet Owner, or Mr. Contractor . . . a good question until you remember that much of the equipment the Redicks will use to farm 1000 acres is the same kind of equipment you use. Diesels, gasolene engines, separate power units, all with a thousand finely machined, intricate pieces of mechanism that demand the finest lubrication in the world. THAT'S WHAT THE REDICKS GET and that's what you can get in all your equipment with Cities Service Heavy Duty C-300 Motor Oil.

This great Cities Service Motor Oil serves bus fleets, truckers, farmers and construction crews throughout most of the country. Try C-300 in your operation and check mileage, wear and performance. Call the Cities Service Office nearest you or write to Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

conveyors and individual control gates at the end of the hopper.

The Apsco transmission permits four work speeds and one travel speed forward and reverse. Varying engine speed from 1,200 to 1,800 rpm increases this number to eight working speeds—from 18 to 74 fpm—and provides a top travel speed of 5¼ mph. Power is transferred to the transmission from a 6-cyl, 68-hp engine through a master clutch and a 6-groove V-belt pulley.

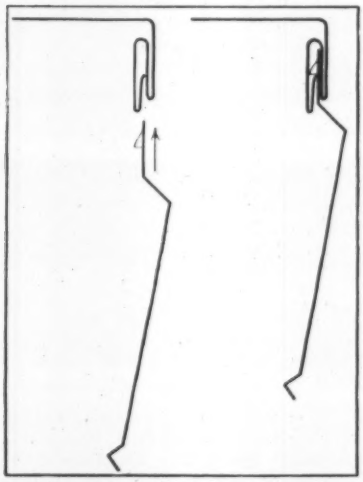
Hydraulic power is used to steer the solid rubber-tired front wheels and for individual braking action on the four drive wheels.

Shipping weight of the unit is approximately 20,000 lb. ALL PURPOSE SPREADER CO., ELYRIA, OHIO.

New cap flashing quickly installed

A new copper cap flashing, consisting of two factory formed copper members, has been designed for rapid installation and clean-finish lines.

The new product is called Revere-Keystone two-piece cap flashing and is made up of a receiver that is to be built into a masonry wall and a counterflashing insert that snap locks into place after the roofing and base flashing have been completed. The receiver itself comes in two forms—both with the same receiver lock design. One is Thru-Wall Flashing of the mechanically keyed three-way type; the other is a flat copper type for use where the design calls for only enough copper to secure the receiver in the wall.



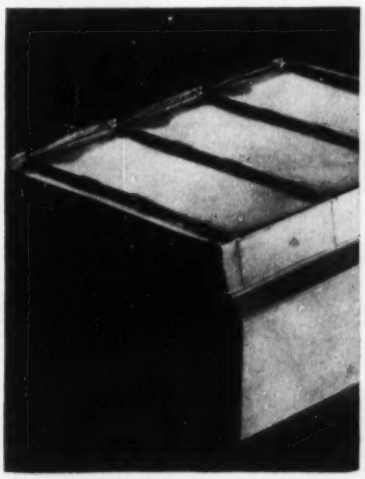
STRUCTURAL DETAILS show thumb nail notches punched into top edge of insert to lock over the free edge of the receiver fold.

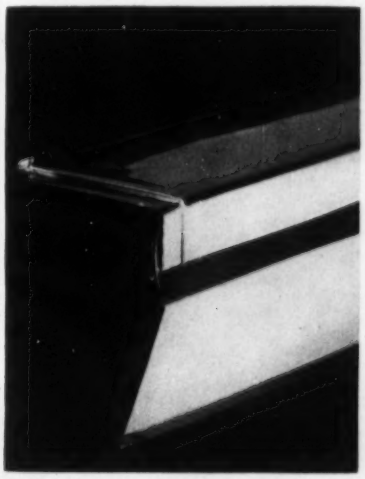
Both forms provide the roofer with an unobstructed wall face for the placement of base flashing and thereby makes the base flashing installation easier and more effective.

While the insert member of the two-piece flashing is simple to install, it is difficult to remove from the receiver without a knowledge of the construction of the snap lock—installed, the flashing is almost vandal-proof. The insert can be removed, however, with simple tools for inspection or repairs to the base flashing.

Not only is the product said to be easily installed, but the company's engineers also report that they have

(*Continued on page 91*)





THRU-WALL RECEIVER (left) is mechanically keyed three-way type. Flat receiver (right) is for use where less holding power is required. Both receive snap-lock inserts.

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THE SUPERIOR BRIDGE DECKING FOR SMALL OR LARGE JOBS

★ 80% OPEN
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★ SELF-DRAINING
★ NON-FLOAT
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★ LIGHT WEIGHT
★ STRONG, SAFE ROAD SURFACE
★ MINIMUM OF ROAD MAINTENANCE

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- Also gratings for bridge sidewalks and gutter catch basins.
- No accumulation of dirt or snow.
- For further information and engineering data ask for catalog.

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ESTABLISHED 1902
OFFICES and PLANTS at
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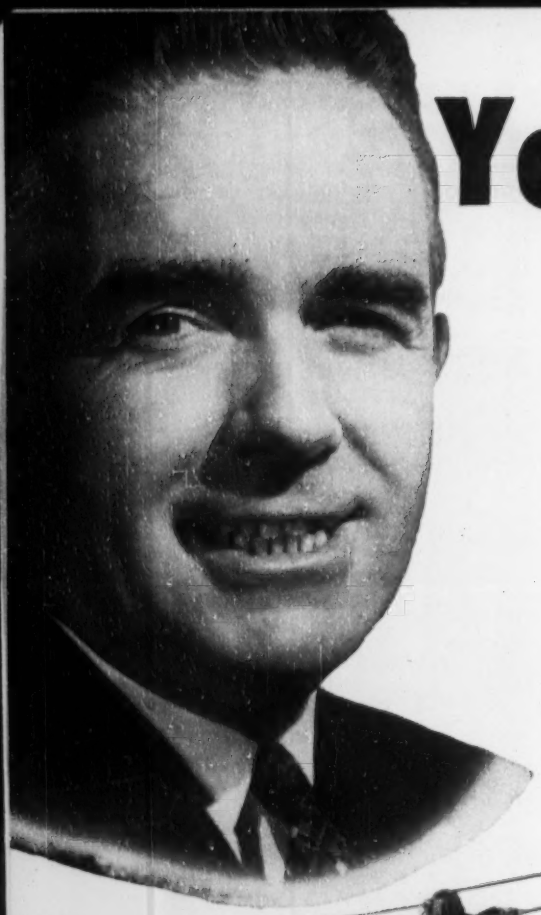
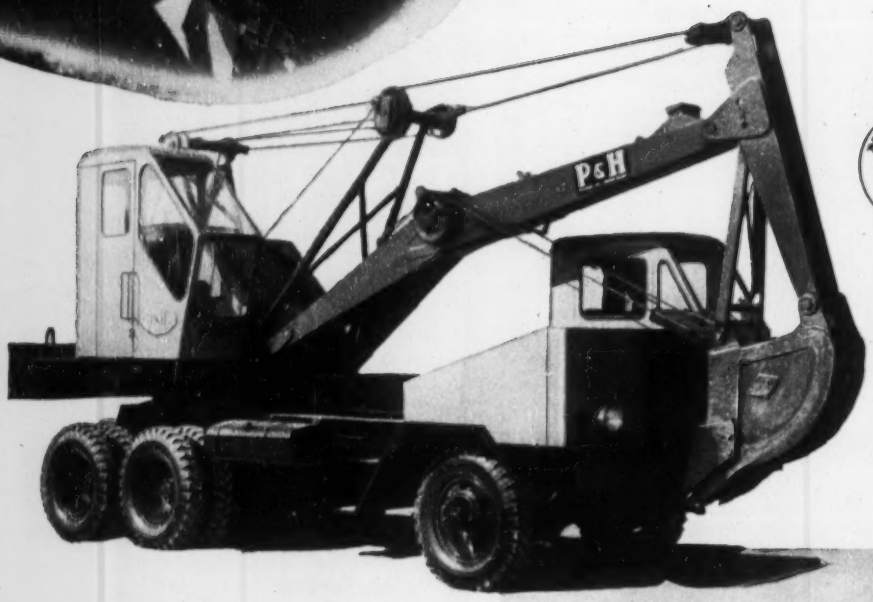


Your P&H dealer

Not for years has there been such an important announcement to shovel users! It's the new, lower prices on P&H machines — the most advanced,

Ask him about . . .



MODEL 55

MITI-MITE

7-ton capacity as a crane.

The simplest, huskiest little truck crane ever built! Power box transmission reduces usual maintenance worries to a simple oil change twice a year! Fully convertible: 11 cu. ft. capacity as shovel, dragline, etc. Here's more production ability . . . to earn more money for you . . . and prices which can't be beaten in the industry.

MODEL 105 10-ton capacity.

Offered on its own P&H-built carrier. The Model 105 is the most powerful, most rugged of all small truck cranes — and offers the largest capacity. Fully convertible . . . and loaded with modern refinements which make it a more versatile money earner on a wider range of jobs.

has big news for you!

finest-performing power shovels and cranes ever built!

P&H's growing volume — larger production — make possible these sweeping cost reductions. Your P&H dealer has full details on the size and type of machine you need. See your nearest P&H dealer, now!

the features, the values, the prices!

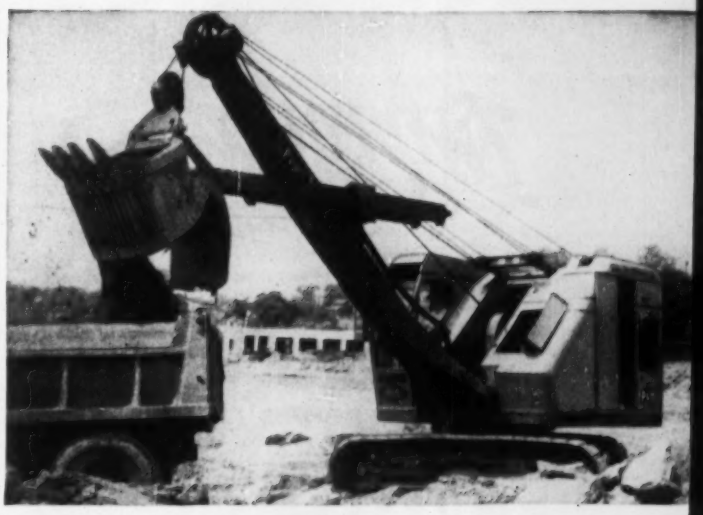
Compare P&H's advanced features with everything on the market — for easy operation, for ruggedness, for low maintenance costs. Think of P&H's greater stability that lets you make more effective use of engine power — that lets you put "more on the hook" with less danger of tipping. These are some of the features that give you greater work capacity — more earning power. P&H performance is far ahead of those with 15 and 20 year old hold-over designs.

Yes, P&H gives you the features — and the new low prices that mean greater values. Here's the sound investment that pays off faster . . . puts more money in your pocket, sooner. Prove it to yourself! See your nearest P&H dealer for full details and prices.

P&H POWER SHOVELS AND CRANES

HARNISCHFEGER CORPORATION

Milwaukee 46, Wisconsin



MODEL 255-A ¾ yd. capacity.

A great machine made even greater with 22 design advancements. It's another remarkable example of advanced design, modern engineering and outstanding features at prices no higher than old, hold-over designs. Many standard P&H items are "extras" on other machines!

See your P&H dealer . . . today!

Your P&H Dealer has the experience, the organization and the facilities to serve you reliably in every way. He's ready to deliver the kind of on-the-ground service that keeps every P&H job moving on schedule. Your P&H Dealer is tops in the business.

MUELLER

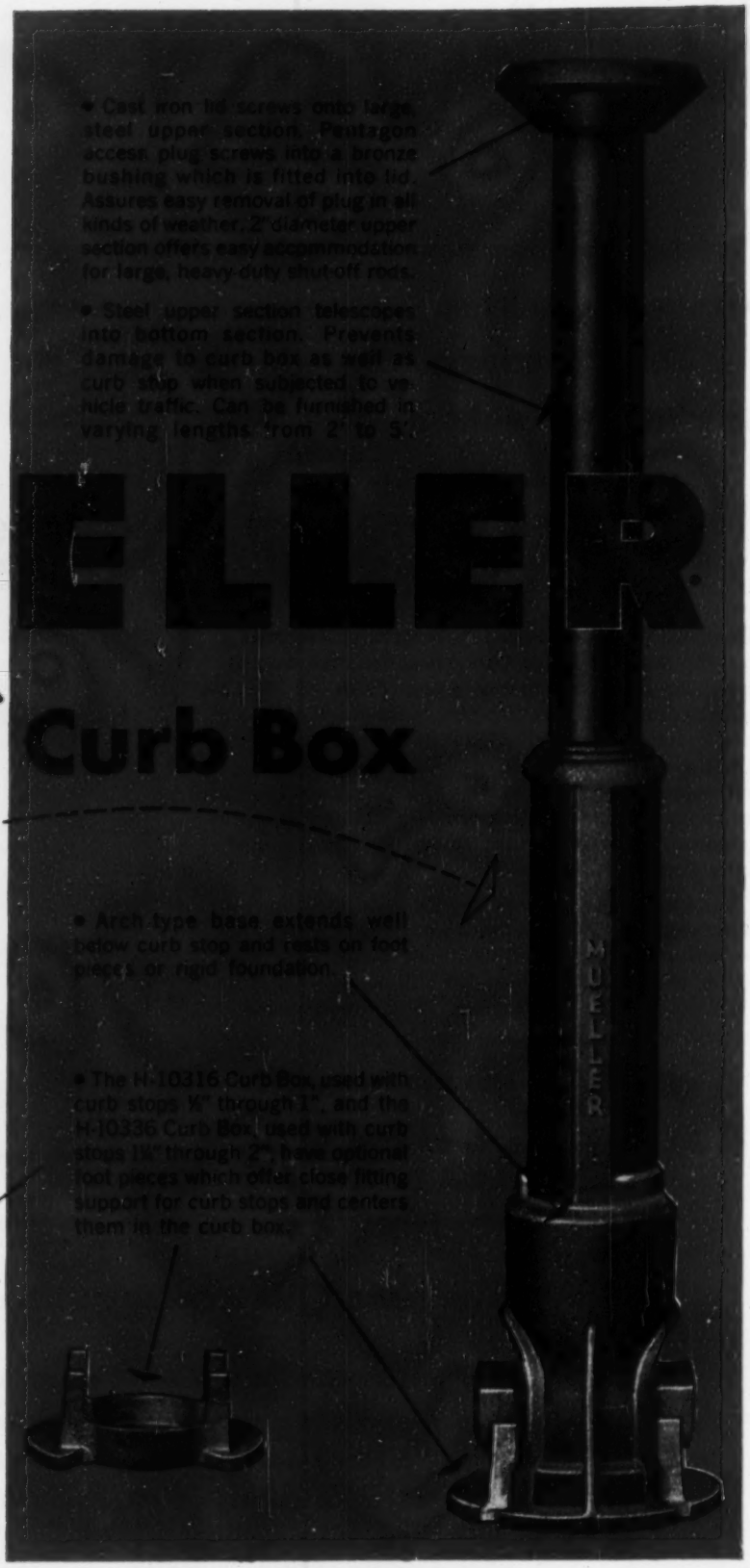
Improved Curb Box

• Cast iron lid screws onto large, steel upper section. Pentagon access plug screws into a bronze bushing which is fitted into lid. Assures easy removal of plug in all kinds of weather. 2" diameter upper section offers easy accommodation for large, heavy-duty shut-off rods.

• Steel upper section telescopes into bottom section. Prevents damage to curb box as well as curb stop when subjected to vehicle traffic. Can be furnished in varying lengths from 2' to 5'.

• Arch type base extends well below curb stop and rests on foot pieces or rigid foundation.

• The H-10316 Curb Box used with curb stops ¾" through 1", and the H-10336 Curb Box used with curb stops 1¼" through 2", have optional foot pieces which offer close fitting support for curb stops and centers them in the curb box.



Contact your Mueller representative or write direct for detailed information.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

also designed-in perfect weather sealing. They say that the factory-formed angles on the receiver and insert cause the latter to hug the base flashing and prevent water from blowing up behind.

This precision forming also has the secondary advantage of giving the completed installation clean lines. A 1-in. locking tongue is used to align the receiver slots and give a uniform appearance.

The flashing is made of either 10-oz or 16-oz solid copper sheet and is therefore fairly rugged. Of course, the bonding ribs on the three-way receiver provide even greater stiffness in the exposed portion. If desired the flashing may be obtained lead coated.

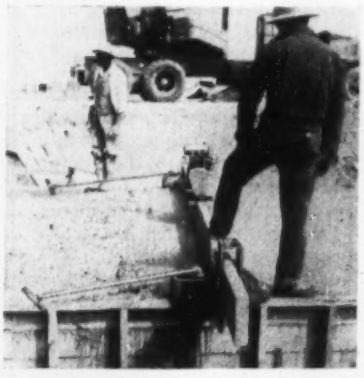
The receiver is furnished in 49-in. lengths (48-in. layup), with 1-in. overlap in a locking tongue dam that prevents longitudinal travel and assures proper alignment. The insert is furnished in 51-in. lengths to permit a recommended overlap of 3-in. Width is 4-in. on the exposed face to allow for a minimum 3-in. overlap of the base flashing. REVERE COPPER & BRASS, INC., 230 PARK AVE., NEW YORK 17, N. Y.

"Screed package" offered for greater versatility

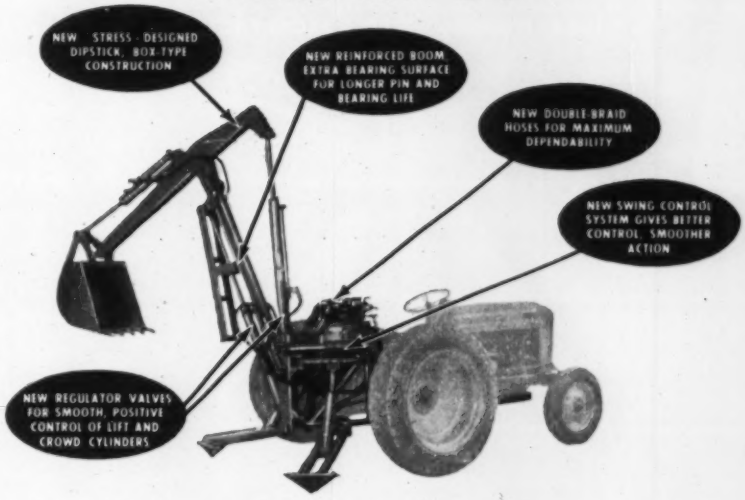
A "screed package" made up of a 2-hp gasoline engine power unit, a pair of end rollers complete with shoes, handles and deflectors and all necessary bolts is being offered to contractors who build their own vibrating screeds.

One such contractor, the Piombo Const. Co., used the "package" and their own wooden beam to surface a culvert across Route 101, two miles south of San Mateo, Calif. The slab was 18 in. thick and 12 ft wide; 3-in. slump concrete was used. It is reported that the surface was finished smoothly with only one pass of the

(Continued on page 92)



New reasons why.. Sherman Power Diggers give you More for '54


NEW STRESS-DESIGNED DIPSTICK, BOX-TYPE CONSTRUCTION
NEW REINFORCED BOOM, EXTRA BEARING SURFACE FOR LONGER PIN AND BEARING LIFE
NEW DOUBLE-BRAID HOSES FOR MAXIMUM DEPENDABILITY
NEW SWING CONTROL SYSTEM GIVES BETTER CONTROL, SMOOTHER ACTION
NEW REGULATOR VALVES FOR SMOOTH, POSITIVE CONTROL OF LIFT AND CROWD CYLINDERS

Important new features, combined with advantages proven by thousands of users, add up to more production for your digging dollar! The Sherman Hydraulic Power Digger is designed and built for that wide range of job requirements beyond the economical use of hand labor and below the efficient use of larger equipment. Yes, between the smallest and largest jobs, you'll find there's always a place for your Sherman Power Digger! Ask your nearby Sherman dealer for an on-the-job demonstration today. Write for free literature, Dept. C-49.

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Literature on new features. Write for your copy now.

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Patent No. 2,303,825. Other patents pending.

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SALES RENTALS
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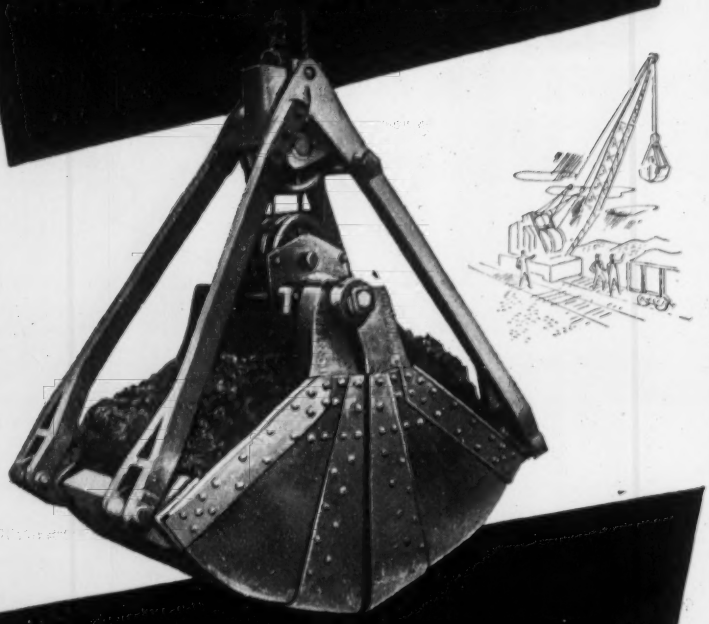

ROPE REEVE, POWER WHEEL AND LINK TYPE

WRITE FOR ILLUSTRATED CATALOGUE

INDUSTRIAL BROWNHOIST CORPORATION

BAY CITY, MICHIGAN

145

Diamond Core

Drilling

CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

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PILE EXTRACTORS

Provide exceptional pulling power, with the sharp energy of blow needed to vibrate and loosen stubbornly set piling. These double-acting extractors come in two standard models—heavy and extra heavy. Standardized line also contains 11 double-acting hammers and 5 single-acting hammers. Write for free bulletin.

Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.

McKiernan-Terry Corporation

Manufacturing Engineers

13 Park Row New York 7, N. Y.

NEW PRODUCTS

screed, and since only two operators had to be used, labor costs were kept down.

The screed vibrating unit is powered by a 2-hp Briggs & Stratton gasoline engine mounted on a multi-plane base. Four vibration dampeners isolate the engine from the screed's vibration.

By varying the throttle control on the engine, the operator may suit the frequency of vibration from 3,600 to 4,800 vpm to the consistency of the mix being placed. A centrifugal mercury clutch carrying the motor drive pulley automatically throws out when the engine is idling—this prevents loading the engine when starting up again.

Wooden screed beams can be supplied in lengths from 7 to 31 ft designed to strike off a flat surface. The lower edge can be trimmed for any standard or invert type of crown, or special beams — crowned in accordance with contractor's specifications—can be supplied at extra cost. STOW MFG. CO., 19 SHEAR ST., BINGHAMTON, N. Y.

New Products briefs . . .

• **Technical fountain pen**—Said to be the first fountain pen for use with both regular and drawing inks, the Rapidograph, a fountain pen with a pencil-like point, is being manufactured by the Koh-I-Noor Pencil Co., Inc., Bloomsbury, N. J. The new pen has a piston type filling device with a visible ink supply. Corrosive inks may be purged simply by filling the pen with cold water.

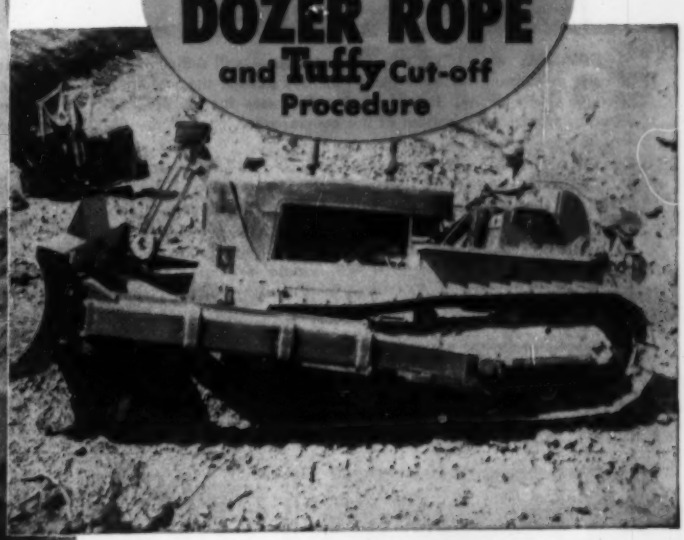
• **Multi-purpose coating**—The Delrac coating is said to penetrate, seal and waterproof concrete, mortar, brick, steel or wood. It is claimed further that the coating prevents powdering, dusting and fluorescence on concrete and seals the pores of wood to prevent moisture penetration and fungus attack. On steel and iron it is reportedly an efficient rust preventative and when used on freshly poured concrete serves as a curing agent. Delrac Corp., Watertown, N. Y.

• **Diesel engines**—The power range of Murphy diesel engines has been extended upward with the addition of four new models. The new model 24 is rated at 185 hp, the model 124 at 210 hp, the model 224 at 200 hp, and the model 324 at 225 hp. The addition of these four models brings to 25 the number offered by the Murphy Diesel Co., 5317 W. Burnham St., Milwaukee 14, Wis.

Use Dozer Rope You Now Throw Away!

Cut Costs with

Tuffy®
DOZER ROPE
and Tuffy Cut-off Procedure



Specially designed for Dozer Use, Tuffy Dozer Rope has the stamina needed to keep on handling the blade long after ordinary ropes are worn out!

Mounted Back of The Wedge Socket, a 150′ reel of ½″ or 9/16″ Tuffy Dozer Rope can give greatly increased service! Here's how: When rope is cut or crushed on the drum you feed through just enough to replace the damaged part—save the 40′ to 50′ you now throw away!

In Half The Time normally needed for replacement, your Dozer is back on the job! Remember, you needn't replace the whole rope. Just feed enough from the reel to replace the part that's damaged. Users report down-time reduced considerably when they install Tuffy!

Combine this built-in strength of Tuffy with the savings offered by the Tuffy Reel Mounting and Tuffy Cut-off Procedure and you'll see why more and more construction men are switching to Tuffy! Try Tuffy Dozer Rope—and *save* the difference!

Tuffy
Dragline
Maximum abrasive resistance, extra flexibility! Rides better on grooves, hugs drum when casting!

Tuffy
Slings
It's next to impossible to materially damage the 9-part machine-braided wire fabric construction of Tuffy Slings by kinking. For longer service with safety, buy Tuffy.

Tuffy
Hoist Line
Designed especially for hoist line use on cranes, clamshells and derricks. Flexible and tough.

Tuffy
Scraper Rope
Flexible enough to withstand sharp bends . . . stiff enough to resist looping and kinking when slack! Moves more yardage.

union Wire Rope **corporation**

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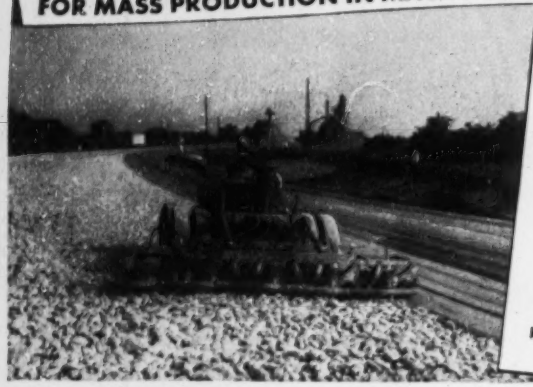
Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric

FOR MASS PRODUCTION IN MACADAM CONSTRUCTION!



THE JACKSON ELECTRIC VIBRATORY COMPACTOR

QUICKLY COMPACTS AND FILLS ROCK COURSES OF REQUIRED THICKNESS!

WORKING SPEEDS: 0 TO 60 FT. PER MIN.

REVERSE TRAVEL SPEED: 5½ M.P.H.

MACADAM: the JACKSON — in one pass — will sufficiently compact 12 inches of rock to support smooth rollers. In four passes, the JACKSON keys and compacts to final density. It takes just two passes for the JACKSON to completely fill voids from top to bottom of the course, when enough dry fines are spread on top in one application.

IN GRAVEL SUB-BASES (Blanket Course) 7" thick, at optimum moisture, the JACKSON in one pass obtains densities exceeding 100% Standard Proctor. Vibratory frequency may be varied to suit conditions.

FLEXIBLE: The JACKSON is available in a standard width of 13', 3". Units may be subtracted on job to meet conditions requiring narrower widths. One 26" unit can be detached and fitted with handle, providing self-propelled compactor for restricted areas, pavement patching, paving drives, compaction of granular soils in trenches, etc.

WRITE FOR COMPLETE DETAILS OR SEE YOUR JACKSON DISTRIBUTOR

JACKSON VIBRATORS, INC., LUDINGTON, MICHIGAN

ROADS **bad**

MAKE THEM **good**

WITH THE NEW

...THE SMALL BITUMINOUS MIXER THAT MEETS THE NEED FOR ALL MAINTENANCE AND SMALL PAVING JOBS

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Grout Holes and Pressure Grouting
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PUBLICATIONS

Masonry cement—Besides describing Medusa's well-known BrikseT gray masonry cement, a new brochure is also a technical guide for architects, builders and dealers in constructing masonry walls. It contains general information and specification data on procedures to follow in construction, including methods for averting efflorescence, provisions for proper flashings and drips, precautions for hot or cold weather construction, recommended types of mortar joints and considerable other information to help in the building of long-lasting durable walls. In addition, the booklet can be used to determine the cubic feet of mortar required to lay up any brick wall, concrete masonry wall, masonry unit wall of clay or concrete or modular clay tile wall. Write for BrikseT Technical Catalog, DEPARTMENT B, MEDUSA PORTLAND CEMENT CO., 1000 MIDLAND BLDG., CLEVELAND 15, OHIO.

Powder tools—An application manual has been compiled from many field reports and includes many photographs and cutaway sketches to show how powder-actuated tools and fasteners are best employed in various installations in building, construction, plumbing, masonry, air conditioning and other crafts. The manual lists specifications on the more than 20 fixtures and accessories and the 56 drive pins and threaded studs which make up the company's powder-actuated fastening system. Selection tables setting forth the proper type of fastener and the proper powder charge for various receiving materials are included as a guide. "Modern Fastening Method" is available from the RAMSET DIVISION OF OLIN INDUSTRIES, INC., 12107 BEREA RD., CLEVELAND 11, OHIO.

Hot starting—How to reduce the cost of cold weather operation of diesel and gas engines through the installation of Kim Hotstart electric preheaters is the subject of a new catalog. The device plugs into any electrical outlet and through a percolator-like action keeps the engine ready for instant starting in cold weather. The catalog illustrates typical installations and specifications are listed for various sizes and types of engines. The attachment is said to effect substantial economies in warm-up time, engine wear and maintenance, battery life, fuel consumption and terminal storage space.—KIM HOTSTART MFG. CO., WEST 917 BROADWAY, SPOKANE 1, WASH.

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Barber-Greene Co..... 94
Belmont Iron Works..... 94
Bethlehem Steel Co..... 58
Blaw-Knox Equipment Div.,
Blaw-Knox Co. 8, 56
Bulkey-Dunton Processes, Inc..... 16
Byers Co., A. M.....2nd Cover

Cast Iron Pipe Research Assoc., Inc...82, 83
Cement Gun Company..... 57
Chevrolet Motor Div., General Motors
Corp. 53
Cities Service Companies..... 86

Douglas Fir Plywood Assn..... 49
Dudgeon, Inc., Richard..... 91
DuPont de Nemours & Co., Inc.
Explosives Dept. 11

Economy Forms Corp..... 84
Ellicott Machine Corp..... 31

Fabreeka Products Co..... 68
Felker Mfg. Co..... 64
Fennel Instrument Corp. of America.... 64
Flint Steel Corp..... 56
Foundation Equip. Corp..... 2

General Electric Company
Electronics Dept. 46
Getman Bros. 84
Goodyear Tire & Rubber Co..... 1
Greer & McClelland..... 66
Griffin Wellpoint Corp..... 70
Gunite Concrete & Const. Co..... 91
Gunite Construction Corp..... 95

Harnischfeger Corp. 88, 89
Healy-Ruff Co. 54
Heede, Inc., B. M..... 50
Hose-McCann Telephone Co., Inc..... 55

Industrial Brownhoist Corp..... 92
International Salt Co., Inc..... 20
Irving Subway Grating Co..... 87

Jackson Vibrators, Inc..... 94
Johnston Pump Co..... 57
Josam Mfg. Co..... 41

Kinnear Mfg. Co..... 60

Laclede Steel Co..... 52
LeRoi Company 4, 5
Louisville Cement Co..... 10

Macomber, Inc. 51
Master Builders Co.....3rd Cover
Maxon Construction Co., Dumpcrete Div. 62
McCaffery-Ruddock Tagline Corp..... 44
McConnaughay, K. E..... 12
McKiernan-Terry Corp. 92
Mueller Co. 90

Northwest Engineering Co..... 3

Oliver Corp. 13

Pennsylvania Drilling Co..... 52
Perlite Div., Gt. Lakes Carbon Corp..... 6
Portland Cement Assn..... 45

Raymond Concrete Pile Co..... 9
Remington Rand, Inc..... 47
Reo Motors, Inc..... 28
Reynolds Metal Co., Inc..... 67
Ryerson & Sons, Inc., Jos. T..... 60

Servicised Products Co..... 55
Sherman Products, Inc..... 91
Smith Co., S. Morgan..... 18
Smith Engineering Works..... 7
Smith Welding Equip. Corp..... 66
Spencer, White & Prentis, Inc..... 61
Sprague & Henwood, Inc..... 94
Superior-Lidgerwood-Mundy Corp..... 54
Symons Clamp & Mfg. Co..... 95

Texas Company .....4th Cover
Timken Roller Bearing Co..... 85
Tinney Drilling Company..... 92

Union Mercantile Co..... 52
Union Wire Rope Corp..... 93
U. S. Pipe & Foundry Co..... 15

Wood Co., R. D..... 32

Yeomans Brothers Co..... 63
Youngstown Sheet & Tube Co..... 42

Professional Services 81

SEARCHLIGHT SECTION

(Classified Advertising)
H. E. Hilty, Mgr.

Employment 76, 77
Business Opportunities 77
Educational 77
Notices
Proposal 73-75
Equipment
(For Rent, Sale, Wanted).....77-81

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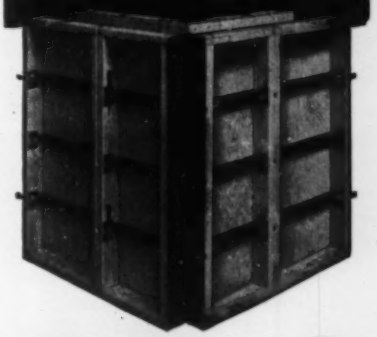

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EDITORIALS

Have atomic power chances improved?

PRESIDENT EISENHOWER'S SPEECH to the United Nations, in which he proposed that the nations of the world possessing fissionable materials contribute some of them to a pool to be used for peaceful purposes, has important meaning for both engineers and construction men.

Naturally, one of the envisioned purposes is the generation of power. To make atomic power practicable will, of course, require the development of new design and construction techniques. Equally important, the availability of economic atomic power will bring great changes in the world that technology serves.

The President's proposal may, therefore, turn out to be the most significant engineering statement of the past year. Only time will tell. Already, however, there are those who draw a parallel between what the President proposes on a world-wide scale and what should be done within our own borders. It is reasoned that if our government is willing to share our fissionable materials with other governments, it should also be willing to share them with our own industries.

Such at-home sharing was the subject of public hearings last summer before Congress' Joint Committee on Atomic Energy. Even before that, in May, 1953, the Atomic Energy Commission, itself, proposed legislative changes to Congress whose effect would be to encourage private participation in atomic power development. Since these proposals were concurred in by the National Security Council it, too, senses this need for at-home sharing of atomic knowledge and fuel. The President's address, even though it was directed toward the world political arena, gives new impetus to these movements.

There is no dissenting voice on the question of whether power can be produced from atomic fuel. It has been produced. The big question is whether atomic power can be produced economically and made competitive with other power producing methods. Numerous studies by teams of industries and public utilities show that atomic reactor power can be sold competitively if the government will buy the by-product plutonium. Should the government need more plutonium than it is now producing, this might be an economical way to get it. However, when and if we accumulate enough atomic weapons, purchasing plutonium just to keep private atomic power plants running would not be very sensible—at least until other power producing methods prove inadequate. Some other means must be found, and the utility industry believes that if it had access to raw materials, protection on patents and cooperative governmental research aid engineers and scientists working in a truly competitive way would develop a practicable reactor.

There is considerable reason to believe that the legislative recommendations of the AEC, which would make some of these things possible, will be passed by Congress. How long then would it be before a full-scale economic power plant can be functioning? Most experts say from 5 to 10 years. Such estimates appear unduly optimistic since it takes as much as 3 years to design and build a conventional power plant, and since present atomic reactor designs can turn out only 3-cent-a-kilowatt power (without subsidy) instead of the 5-mil power that is needed. Nevertheless, concerted research and development have produced miracles before, and might do so again. Also, there are places in the world where even present reactor designs could produce economic power. So the time element is relative.

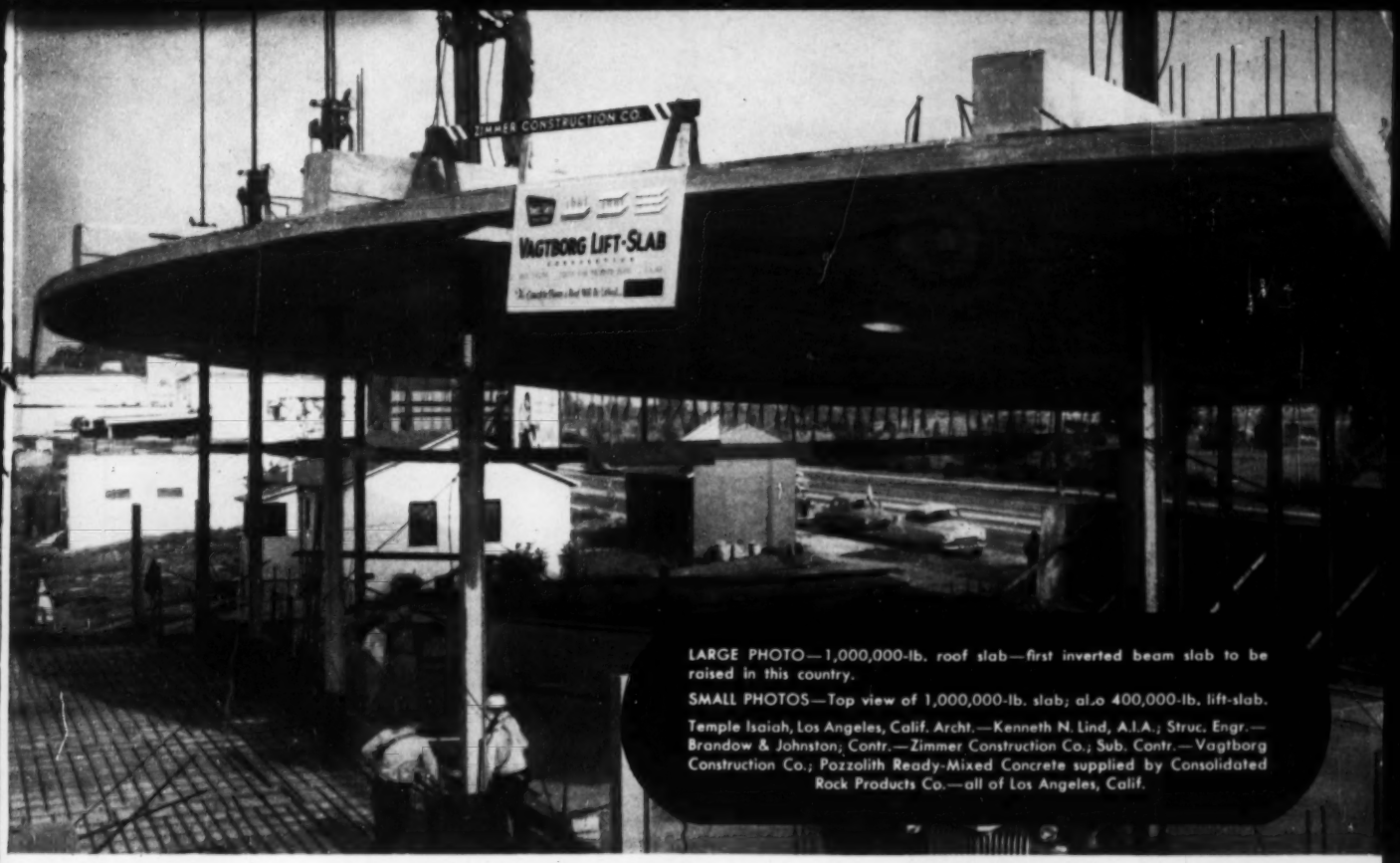
One student of power needs, Palmer Putman, in a new book, "Energy in the Future," concludes that a hundred years from now 60% of the world's power will have to be supplied by the atom. Such a great transformation, even in so long a time, would require a fast start now. Actually, we may be witnessing just that. AEC is going ahead with its own experimental power plants, one already under contract to Westinghouse and another which TVA has been commissioned to develop. In addition almost everyone seems to be in favor of broadening the attack on the problem to deal private industry in. As a consequence the prospects for atomic power have brightened immensely, illuminating in the process an entirely new field for the application of civil engineering and construction talents.

It may be too shallow

LEGISLATION authorizing U. S. participation is the St. Lawrence Seaway is pending in both houses of Congress with White House approval. Predictions are for early favorable action on this controversial issue. Still no one in authority on this side of the border has raised the question of what depth should be used for locks in canals to be constructed around the dams that are to be built in the international section of the river.

Canada's current plans for new sections of the waterway call for 27-ft depth in the locks, which is same as in the Welland Canal between Lake Erie and Lake Ontario. Yet representatives of the National Federation of American Shipping have testified that the draft of our Liberty vessels is 27 ft 8 in., that the Victory ships have a draft of 28 ft 6 in., and that the new Mariner type draws 29 ft 9 in.

If this country is going to participate in the construction of new links in the St. Lawrence Seaway, it should make certain that the locks are adequate for the ships of today that may wish to serve ports on the Great Lakes even if that means sharing in the cost of deepening the Welland Canal. The time to determine what depth is economically justified is now before digging starts.



LARGE PHOTO—1,000,000-lb. roof slab—first inverted beam slab to be raised in this country.

SMALL PHOTOS—Top view of 1,000,000-lb. slab; also 400,000-lb. lift-slab.

Temple Isaiah, Los Angeles, Calif. Archt.—Kenneth N. Lind, A.I.A.; Struc. Engr.—Brandow & Johnston; Contr.—Zimmer Construction Co.; Sub. Contr.—Vagtborg Construction Co.; Pozzolith Ready-Mixed Concrete supplied by Consolidated Rock Products Co.—all of Los Angeles, Calif.

First Inverted Beam Lift-Slabs Are POZZOLITH CONCRETE

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Constructing heavy-duty Texaco Asphaltic Concrete on 11½-miles of US 85-87, from Trinidad, Colo. south to the New Mexico line.

Special device on paving machine forms an asphalt shoulder tapering to a feather edge.

The completed project, constructed by Leone Construction Company, Inc. of Trinidad, under direction of State Resident Engineer A. C. Copeland.

US 85-87 is one of Colorado's main highways. It is used by most Colorado-New Mexico traffic, as well as considerable Colorado-Texas traffic. An 11½-mile section of this route from Trinidad, Colo. to the New Mexico line was a two-lane road with an oil mat surface. The reconstruction of this road last year to meet the demands of today's traffic was featured by the use of heavy-duty hot-mix Texaco Asphaltic Concrete paving and low-cost local aggregate.

The old oil mat was broken up and pulverized, then spread to a width of 33 feet to provide a 3-lane highway. This was topped by a 6-inch sub-base of mine waste, followed by a 2-inch gravel leveling course. The hot-mix Texaco Asphaltic Concrete wearing surface completed the new highway. The compacted thickness of the asphalt top was 3 inches at the outside, decreasing to 2 inches in the center. A special 18-inch beveling device attached to the asphalt paving machine (see photograph) places an asphalt shoulder at each side of the pavement, tapering from 3 inches to a feather edge. This minimizes edge break-off and the hazard attached to moving on and off the pavement.

Texaco Asphalt Cements, Cutback Asphalts and Slow-Curing Asphaltic Oils offer the road builder a wide choice of improvements for highways, streets and airports. These types range from resilient, heavy-duty pavements of asphaltic concrete and sheet asphalt down to a dust layer. Helpful information about all of these types has been incorporated in two illustrated booklets, which you can obtain without obligation by writing our nearest office.

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